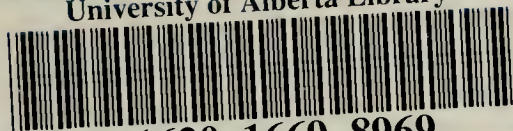


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Blue Jay

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FOR SASKATCHEWAN AND ADJACENT REGIONS

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Assistant Editors: Robert W. Nero, Gary Seib, Vern Harms

Circulation: Lorne Scott

Editorial Assistants: Ed Driver, Molly Denson,
Bill Richards, Jean Meston, Thelma Pepper

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Downy Woodpecker

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THE NATIVE ROSES OF SASKATCHEWAN

by VERNON L. HARMS*

Among the more common as well as showy wildflowers of Saskatchewan are the various species of native roses which grow on the prairies, in the woodlands and along roadways. Their blooming adds a profusion of colour and variety to the landscape. The roses are also attractive in fruit stage with their usually bright red "hips". These conspicuous flowering plants are familiar to all nature lovers; yet it is unfortunate that the amateur naturalist is immediately confronted with a great difficulty of distinguishing the various species of native roses. The present article is written in an attempt to lessen this difficulty.

The roses are generally considered to be a taxonomically confused group. In the past, botanists recognized numerous North American species within the genus *Rosa*, but today it is usually thought best to combine many of these into far fewer, really good, supposedly self-perpetuating, natural species. There is considerable confusion about the identity of the species of Saskatchewan roses which is mainly due to apparently frequent hybridization between species and to a considerable variability within each species. While most of this variability within species is probably genetically based, some of it, at least, appears environmentally induced by growth in different habitats. This variability makes it hard to clearly define the different species. However, I still believe that despite these difficulties our species of native

roses are reasonably distinct and can usually be identified both in the field and in the laboratory.

Although numerous species of native roses have often been recognized in Saskatchewan, and even Boivin in his recent *Flora of the Prairie Provinces* (Part I)¹ still accepted six species, I believe it is taxonomically best to consider all of these forms as belonging to only three good species. These three species are (1) the **Wild Prairie Rose** (*Rosa arkansana* Porter, including *R. suffulta* Greene, *R. alcea* Greene, *R. lunnellii* Greene, *R. subglauca* Rydb., *R. bushii* Rydb., *R. heliophila* Greene and *R. pratincola* Greene), (2) **Wild Woods Rose** (*Rosa woodsii* Lindl., including *R. fendleri* Crepin, *R. terrens* Lunnell, *R. macounii* Greene, *R. fimbriatula* Greene, *R. sandbergii* Greene, *R. ultramontana* Heller, *R. grosseserrata* A. Nels., *R. salicorum* Rydb., *R. pyrifera* Rydb., *R. puberulenta* Rydb., *R. lapwaiensis* St. John and most previous Saskatchewan reports of *R. blanda* Ait.), and (3) the **Wild Prickly Rose** (*Rosa acicularis* Lindl., including *R. bourgeauiana* Crepin, *R. butleri* Rydb., *R. engelmanni* S. Wats. and *R. sayi* Schwein.). Another species which has been reported for Saskatchewan is the Smooth Rose (*Rosa blanda* Ait.) but, while this is evidently a valid species to the east of us, all specimens reported to be this species from Saskatchewan that I have seen would appear to represent an extreme, nearly prickless form of either the Wild Woods Rose or sometimes the Wild Prairie Rose.

Rose plants are shrubs or semishrubs with the main stems either

*Fraser Herbarium,
University of Saskatchewan,
Saskatoon, Saskatchewan.

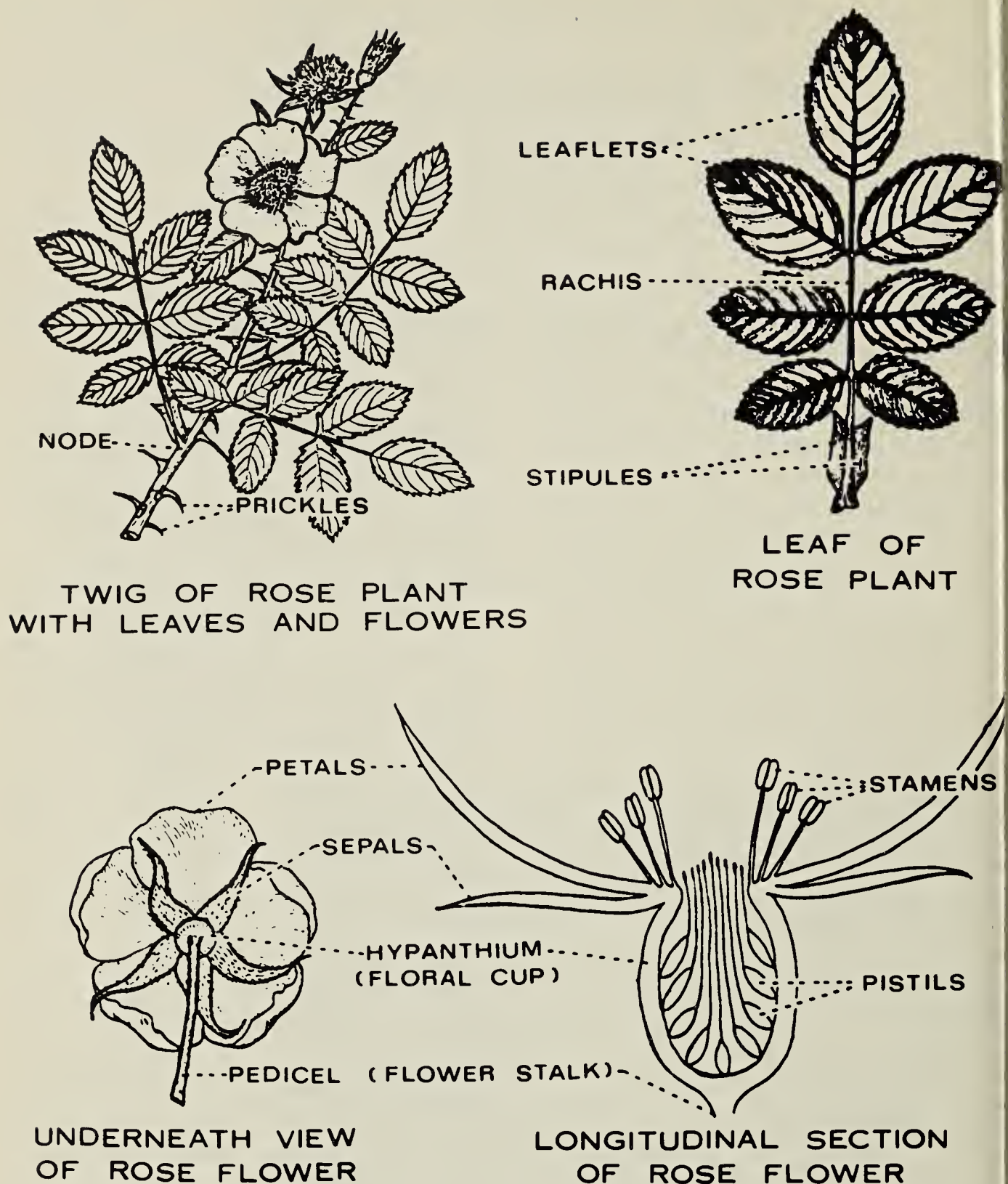


Fig. 1. Stem, leaf, and flower parts of a rose plant.

woody or semiherbaceous. The stems are more or less prickly. The leaves occur singly at the stem nodes and are spirally arranged around the stems. The leaves have prominent stipules and are compound with 5 to 11 leaflets along a rachis (see Fig. 1). The wild rose flower is large and has an exaggerated floral cup (hypanthium)

on whose rim are borne five partially fused, persistent, green sepals, five separate, early deciduous, pink to red (or rarely white) petals, and numerous stamens. The numerous simple pistils are borne on the inside of the floral cup with their long styles extending out of the opening at the top (see Fig. 1). The ovary of each pistil develops

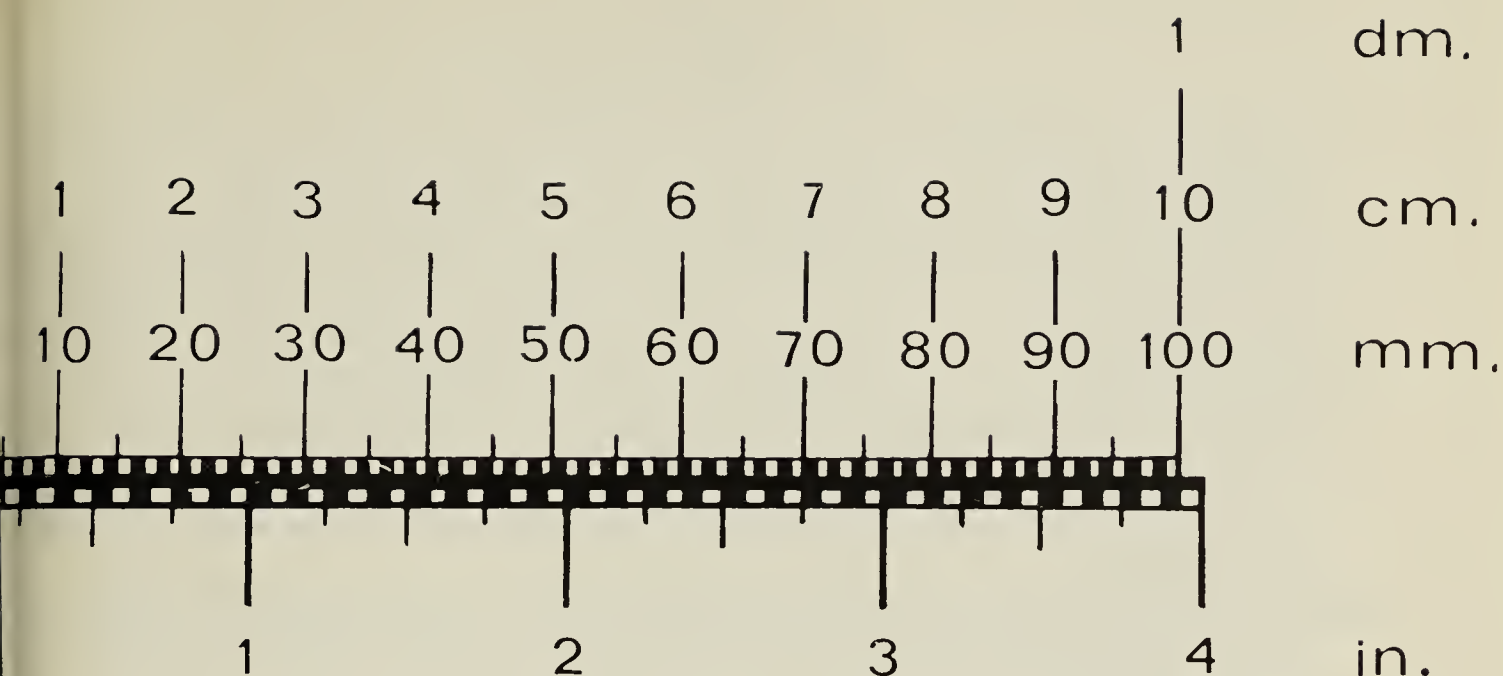


Fig. 2. Comparison of metric measurements with inches.

into an achene (the 1-seeded true fruit). The entire floral cup turns reddish to reddish-purple when ripe and is called a rose "hip" or, loosely, the rose "fruit". Rose "hips" are a good source of Vitamin C and may be used for making jelly, jam, and syrup. Native peoples in the north have long used them as a supplementary food source.

The differences between the three native species of Saskatchewan roses which are accepted here are shown in table 1. Measurements in this chart are given in the metric system since this is the language of the botanist and soon will be for all of us. However, the conversion of the metric system to inches is shown in Fig. 2 for the convenience of everyone. While a comparison chart such as this one is probably the best means for fully comparing and contrasting the characters of the various species and may also be used for the identification of unknown specimens, an easier method for species' identification is the use of a taxonomic key. Such an identification key to separate our Saskatchewan species of roses follows. In using this key, first make a choice between the

number 1 leads (alternatives in the couplet); if the choice is the second of these number 1 leads, move on to the choice between the number 2 leads. In this way one will arrive at the correct species' identification. A magnifying glass (at least 10X) is necessary in order to properly see the hairs and glands on the leaf parts and elsewhere.

Each of the three native roses is illustrated in Figure 3. However, most of the distinguishing characteristics among the species of roses are too small to show on such drawing; these are indicated in the comparison chart and identification key.

There are some variations in each of our species that appear worthy of taxonomic recognition. Within the **Wild Prairie Rose**, plants with completely hairless leaves are recognized as variety *arkansana*. Most of our Wild Prairie Rose plants in Saskatchewan belong to variety *suffulta* (Greene) Cockerell with the leaf stalk, rachis and undersurface of the leaflets quite densely hairy and sometimes the former sparsely glandular. Rarely occurring are some plants with more strongly glandular stipules, leaf stalk and rachis and these have often been

IDENTIFICATION KEY FOR THE NATIVE SASKATCHEWAN SPECIES OF ROSES

1. Main stems semiherbaceous, mostly dying back to ground level annually; generally unbranched, terminating in a round-topped cluster of several many flowers; stem prickles short, to 3 mm (1/8"), all slender and weak; leaflets mostly 9-11, mostly less than 2.5 cm (1") long, not glandular beneath or on teeth; stipules, leaf stalk, and rachis mostly non-glandular except on the stipule teeth **Wild Prairie Rose** (*Rose arkansana*)
1. Main stems woody, persistent through winter, much branched; the flowers form on short lateral branches or longer terminal branches from previous year's stems; stem prickles longer, to 5 mm (1/5"); leaflets mostly 3-7, usually more or less glandular beneath; stipules, leaf stalks, and rachis usually more or less glandular **Wild Woods Rose** (*Rosa woodsii*)
2. Prickles below the stipules clearly differentiated, usually longer, stouter, with swollen bases, often flattened or recurved; stem prickles dense below becoming sparser above, some slender with thin flat bases, some stout and flattened with swollen bases; leaflets smaller, mostly shorter than 2.5 cm (1"), usually acute at base; stipules, leaf stalk, rachis and leaflet undersurface only sparsely glandular; flowers small, 2.5 - 4 cm (1 - 1-1/2") in diameter; sepal length mostly 1-1.5 cm (about 1/2"); "hips" nearly spheric without neck below, 6-12 mm (1/4-1/2") in diameter. **Wild Woods Rose** (*Rosa woodsii*)
2. Prickles below the stipules not differentiated; stem prickles uniformly dense to summit, all slender with thin flat bases; leaflets larger, mostly longer than 2.5 cm (1"), with bases obtuse or rounded; stipules, leaf stalk, rachis, and leaflet undersurface strongly glandular; flowers larger, 4-6 cm. (1-1/2 - 1-1/2") in diameter; sepal length mostly 1.5-3 cm. (1/2 - 1 1/5"), hip spheric without neck, or else elongated ellipsoid or pear-shaped with a distinct neck 10-20 mm (1/2-1") in diameter. **Wild Prickly Rose** (*Rosa acicularis*)

separated as a distinct species, *R. alcea*, but this does not seem warranted. Boivin, in contrast to other authorities, distinguishes *R. alcea* as a type with flowering branches from persistent woody stems of the previous year.¹ However, I would consider such plants with the stems persisting through the winter, rather than dying completely back to ground level, as probably only an environmental form of the Wild Prairie Rose in more protected sites. Such occasionally persistent woody stems usually tend to produce short flowering branches the following year bearing fewer flowers and blooming earlier than usual for the species.

Within the **Wild Woods Rose**, plants with hairless and glandless leaves have been distinguished as variety *woodsii*. Such plants are widespread but not too common. Most of our Saskatchewan plants of the Wild Woods Rose belong to variety *fendleri* (Crepin) Rydb. with more or less hairy and usually somewhat glandular leaves with gland-tipped teeth. Taller plants reaching 3 meters (6-1/2 - 10') and entirely lacking gland-tipped teeth are distinguished as variety *ultramontana* (Wats.) Jeps., but this is a Rocky Mountain form apparently not to be expected in Saskatchewan. Another form with numerous, unusually large stout, flattened prickles on the main

TABLE 1

Comparison chart showing the differences among the native species of roses in Saskatchewan.

	Wild Prairie Rose <i>Rosa arkansana</i>	Wild Woods Rose <i>Rosa woodsii</i>	Wild Prickly Rose <i>Rosa acicularis</i>
Plant height	(1-)2-4 dm.* ($\frac{1}{2}$ -1½')	5-10(-15) dm. (1½-5')	5-10(-15) dm. (1½-5')
Main stems	semiherbaceous, thin, mostly dying back to root annually	woody, persistent through winter	woody, persistent through winter
Stem branching	unbranched to little branched	much branched	much branched
Density of stem prickles	dense below, becoming less so above	dense below; fewer or rarely none above	uniformly dense to summit, even on short lateral flowering branches
Nature of stem prickles	straight, slender, weak, unequal; to 3 mm long	straight to curved; some slender, some stout and flattened; to 5 mm long	straight, slender, very unequal, not flattened; to 5 mm long
Prickles below stipules	not differentiated	clearly differentiated pairs; often longer, stouter, and flattened; straight or curved	not differentiated
Leaflet number	(7-)9-11, crowded	5-9, crowded	(3-)5-7, not crowded
Leaflet length	1-2.5(-3) cm	(1-)1.5-2.5(-3) cm	(1.5-)2.5-5 cm
Leaflet base	mostly acute	mostly acute; sometimes obtuse	obtuse or rounded
Leaflet margin	sharply saw-toothed	coarsely to sharply saw-toothed	coarsely and irregularly toothed
Leaflet teeth	not glandular	glandular or not	always glandular
Leaflet surface	not glandular beneath	sometimes glandular beneath	usually glandular beneath
Leaf stalk and rachis	hairless to usually fine short-hairy; rarely glandular	mostly fine short-hairy; sometimes bristly or sparsely glandular	fine short-hairy and strongly glandular
Stipule pair width	3-9 mm	(3-)4-7(-10) mm	6-12(-15) mm
Stipule surface	non-hairy to usually soft hairy, rarely glandular	usually hairy and only sparsely glandular	hairy and densely glandular
Stipule margins	smooth to sometimes glandular-toothed	only sparsely glandular-ciliate if at all; usually glandular-toothed	densely glandular-ciliate and glandular-toothed
Flower position	terminating main stem of season, or rarely on short lateral branches from previous year's stems	on short lateral branches from previous year's stems	on short lateral branches from previous year's stems
Flower no.	(2-)3-many in round-topped cluster	(1-)2-3(-6)	mostly solitary, rarely 2-3

Flower diameter	3.5-6 cm	2.5-4.0 cm	4-6 cm
Flower stalks	stout; hairless to loosely long-hairy or glandular	slender; hairless, rarely glandular	slender; hairless, rarely glandular
Hypanthium diameter in flower stage	4-5 mm	3-5 mm	3-4.5 mm
Sepal length	(1-)1.5-2(-3) cm	1-1.5 cm	1.5-3 cm
Sepal basal width	3-5 mm	2-3.5 mm	2-4 cm
Sepal surface	glandular	hairless to fine short-hairy, sometimes glandular	glandular
Sepal position	erect to spreading in fruit	erect to spreading in fruit	erect in fruit forming a beak
Petal length	(12-)15-25(-28) mm	(10-)15-20(-23) mm	(15-)20-30(-35) mm
Mature hip shape	nearly spherical	nearly spherical	spherical without neck to ellipsoid or pear-shaped with distinct neck
Diameter of mature hip	8-15 mm	6-12(-15) mm	10-20 mm
Achene length	4-5 mm	3-4 mm	4-5.5 mm
Blooming time	extended, late June - August	short, late June - mid-July	short, mid-June - mid-July
Habitat	open sandy prairies and plains	forests, edges of woods, and prairies	forested regions
Reported Chromosome Number ²	2n = 28	2n = 14	2n = 42

*Metric number in parenthesis is an unusual extreme and unusual value.

stem, and stout, strongly recurved prickles below the stipules on the branches has been separated as variety *terrens* (Lunnell) Breitung. A form with bristly rather than smooth "hips" is recognized as forma *hispida* (Turner) Boivin. The wide range of habitats that the Wild Woods Rose occurs in from forests to dry prairies results apparently in considerable environmental variation within this species. The leaf and flower parts appear somewhat smaller and the stem prickles are fewer but often thicker on plants of the dry prairies than on forest plants. However, this environmental

variation is not considered worthy taxonomic recognition.

Within the **Wild Prickly Rose**, the typical variety *acicularis* has elongate ellipsoid to pear-shaped "hips" with distinct neck below the sepals. More common in Saskatchewan, however, is variety *bourgeauiana* Crepin with nearly globose "hips" which are strongly rounded at both ends and have a less well developed neck.

The distribution in the province of the three native Saskatchewan Roses is shown in Figure 4, based upon specimen records in the Fraser Herbarium.



WILD PRAIRIE ROSE
ROSA ARKANSANA

WILD WOODS ROSE
ROSA WOODSII

WILD PRICKLY ROSE
ROSA ACICULARIS

Fig. 3. Habit sketches of native rose species in Saskatchewan.

herbarium and other herbaria in the province. The resulting distribution maps tend to distort the actual distributions somewhat, at least as far as frequency is concerned; collecting in the province has been highly uneven, having been concentrated around the botanical centers of Saskatoon, Regina, and Swift Current, and least in the whole northern half of the province. In particular, the Wild Prickly Rose is undoubtedly much more abundant and widespread in the north than the distribution map indicates. The Wild Prairie Rose is found in prairie regions throughout the southern part of the province. The Wild Woods Rose (or Common Wild Rose) is characteristic of both woodlands and prairies primarily in the southern half of the province where it is quite abundant but also extends in reduced numbers to northernmost Saskatchewan. It occurs with the Wild Prairie Rose on the prairies and with the Wild Prickly Rose in woods.

The Wild Prickly Rose is most characteristic of the boreal forests of northern Saskatchewan where it often represents a dominant undershrub, especially in upland forests, but in this province it also occurs in aspen woodlands quite far south of the boreal forest.

Each of our native rose species will apparently hybridize with any of the others if given the opportunity. The Wild Prairie Rose appears quite distinct wherever it grows in the province but it does hybridize, especially with the Wild Woods Rose. The Wild Woods Rose and the Wild Prickly Rose apparently hybridize frequently and produce numerous confusing intermediates. For instance, in the Saskatoon area, many plants of the Wild Woods Rose, which is the common woodland and prairie edge species of the region, appear introgressed with characters from the Wild Prickly Rose. Often one may

DISTRIBUTION IN SASKATCHEWAN

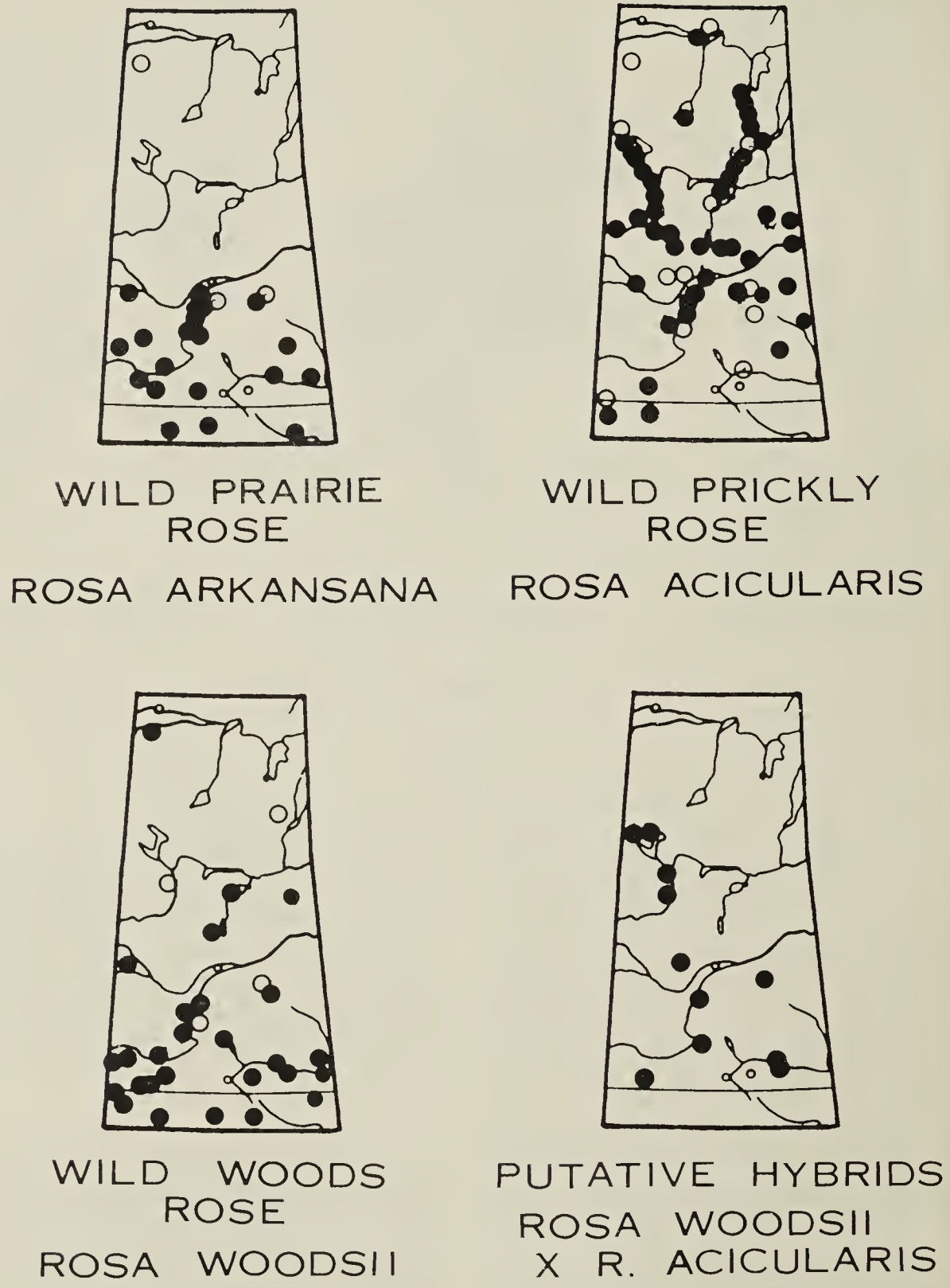


Fig. 4. Distribution of native rose species in Saskatchewan based in herbarium specimens

even find that some parts of a shrub will reveal the characters of the Wild Woods Rose while other parts of the same plant have the characters of the Wild Prickly Rose. Mostly, the hybrids show various degrees of intermediacy between the two parent

species revealing some of the characters of both throughout. The Saskatchewan distribution of putative hybrids between these two species is shown in the last map of Figure 4 based upon the specimens in the Frase Herbarium and other herbaria in the

province. Specimens nearest the Wild Prickly Rose but showing some characters of the Wild Woods Rose are indicated by open, rather than closed, circles on the distribution map of the Wild Prickly Rose. Specimens nearest the Wild Woods Rose but showing some characters of the Wild Prickly Rose are indicated by open, rather than closed, circles on the distribution map of the Wild Woods Rose. Specimens of the Wild Prairie Rose which are somewhat similar to the Wild Woods Rose are indicated by

open circles on the distribution map of the Wild Prairie Rose.

¹BOIVIN, B. 1967. *Flora of the Prairie Provinces. Part I.* Reprinted from *Phytologia* Vol. 15: 357-359.

²HITCHCOCK, C. L., A. CRONQUIST, M. OWNBEY, and J. W. THOMPSON. 1961. *Vascular Plants of the Pacific Northwest. Part 3.* Univ. of Washington Press, Seattle. pp. 164-171.

Editor's Note. These three roses are treated in relation to Alberta in the September, 1973, *Blue Jay*.



Bumblebee on Gaillardia

Gary W. Seib

MERLINS —

THE SASKATOON FALCONS

by LYNN W. OLIPHANT*

High above a busy intersection a lone bird flew in erratic circles, rapidly twisting and diving one moment, soaring on still wings the next. What kind of bird and why was it acting so strangely? A glance through binoculars told the story. An immature Merlin (Pigeon Hawk) was hawking dragonflies. The air was full of the large insects. The Merlin, flying about 250 feet above the Saskatoon traffic, pursued a straight course until within a few feet of a dragon fly; then with a quick twisting stoop she had her prey. It was eaten on the wing as she soared in circles. The entire drama was repeated several times in the space of 10 or 15 minutes, sometimes with a successful catch and sometimes not.

When we hear the word "falcon", most of us picture a large bird of prey circling majestically, high above a steep wilderness cliff. The smaller falcons, however, are regularly found in or near even our largest cities. The city of Saskatoon supports a surprisingly high density of Merlins all year long.

Falcons of North America may be divided into two groups on the basis of size. The large falcons include the Gyrfalcon, Peregrine and Prairie Falcon. The American Kestrel (Sparrow Hawk) and Merlin are our two smaller falcons. The American Ornithologists' Union has recently changed the names of these two falcons. Like the previous change in name of the Peregrine Falcon from

"Duck Hawk," this will, hopefully give these birds a more favourable public image.

If one has the opportunity to observe these five falcons in the wild (a possibility in Saskatchewan), it soon becomes evident that the Merlin is more similar to the large falcons than it is to the Kestrel. An aerial hunter of small birds, the Merlin gives an impression of power, size and dash far above what might be indicated by its actual measurements. Although its wing span (about 23 inches) is only slightly larger than that of a Kestrel, it weighs twice as much, all of about 10 ounces for a female. Its feet are also distinctly larger than those of the Kestrel, probably corresponding to the difference in the size of their typical prey.

My first extensive experience with Merlins occurred during the late 1960's while I was a graduate student in Seattle, Washington. The black coastal race of the Merlin was a regular winter resident in the city. Individuals were seen on several occasions pursuing or eating small birds. Upon coming to Saskatoon in September, 1971, I was pleasantly surprised to find Merlins throughout the year at densities far exceeding anything I had previously seen. Between September 1, 1972, and September 1, 1973, my notes record 37 individual sightings of Merlins in the Saskatoon area (not including observations at nest sites).

Merlins have been reported on the Saskatchewan Christmas counts in 11 of the past 20 years (March issues of *Blue Jay*). Saskatoon has had at least

*Department of Veterinary Anatomy
University of Saskatchewan
Saskatoon, Saskatchewan
S7N 0W0



Adult female Merlin with partially eaten English sparrow.

Lynn W. Oliphant

one Merlin on 14 of the past 20 counts. Six individuals were reported in the Saskatoon area on the 1972 count which was the high for all of North America.

During the past 4 years (1971-1974) there have been a minimum of eight nesting attempts by Merlins within the city limits of Saskatoon. Five of these nests successfully fledged young. One unsuccessful attempt was apparently destroyed by a storm which blew down the nest and eggs. It is believed that the other two nests were climbed during the early stages of incubation (perhaps several times) which may have been responsible for the nest failure. As far as is known, the successful nests were not climbed prior to hatching of the young.

Many observations were made at several of these nests and two nestings were followed in detail. The advantages of studies at an urban nest site are extraordinary. The adult birds are accustomed to people, dogs, cars, etc. directly under the nest. They will, therefore, carry out their normal activities while being observed without the constraints and encumbrances of a stationary blind.

Pairs of Merlins were observed in several parts of the city during April and May. At this time the birds were often highly vocal, screaming as they flew around a prospective area. In seven of eight cases, the nest was high in a large spruce with tall deciduous trees nearby. The nest itself was in what appeared to be an old Crow's nest. Laying and initiation of incubation generally occurred during the first half of May. Definite dates were not obtained since an effort was made not to disturb the birds by climbing the nest.

One of the most striking differences between Merlins observed nesting in Saskatoon and other accounts of this species is the very low intensity of nest defence. The extreme aggressiveness

of nesting Merlins has often been emphasized.^{1 2 3} Fox states that he was frequently met by the screaming male a half mile from the nest site.² Two of the nests that were closely observed in Saskatoon were in densely populated areas. Neither the male nor female at these two sites engaged in defence of the nest against humans or other animals to any extent. The adult birds tolerated humans, dogs, cats and large birds, including crows and gulls without any apparent concern or vocalizations. The exceptions to this low level of defence were when the nests were climbed to band the young and when crows (twice) and grackles (once) came within 20 feet of the nest site. At least one and probably two pair of crows successfully reared young within 200 feet of one nest with remarkably little interaction with the Merlins. After fledging at one nest, the adult female falcon appeared to recognize me and began screaming if I looked at her. Other people in the area were generally ignored. It is estimated that between 5,000 and 10,000 people passed within 50 feet of these two nests while they were occupied. Only a handful of people realized there were birds nesting there. This low level of defence is probably highly adaptive in an urban setting, if for no other reason than the adults would be spending nearly the entire day simply defending the nest site.

The two Merlin nests in highly populated areas were close to major arterial roads with a heavy traffic load. Although the Merlins seemed accustomed to even large trucks and motorcycles, on several occasions they were disturbed by cars or truck backfiring. When this occurred the adults would immediately fly from their perches with a start and circle the nest site, returning within a minute to perch. No vocalizations accompanied these disturbances.

At least three distinct adult calls



Urban habitat of one nest site. View about 100 feet from nest.

were distinguished. The loud "*ki-ki-ki-ki-kee*," typical of nest defence, was heard during most interactions between the male and female, especially when prey was being brought to the nest by the male. The male generally initiated this by calling as he flew toward the nest. A much softer version of the same call was heard when the adults alternated incubation duties at the nest or transferred prey while perched on a limb. The male appeared to pull the female off the nest during incubation by a series of single soft "*chups*." This call was similar to the call used by the female at the nest during the first week or two after hatching and was described by Lawrence as a series of sharp "*ticks*."³ The young were heard just prior to and after fledging, especially at feeding times. They called in a series of single rising notes or "*chee*'s." Within a week of fledging, the single calls were more

closely spaced and began to be grouped into calls more like the adults.

At one nest the male was definitely observed to participate in incubation duties. The male typically spends much of the day perched within 50 feet of the nest during incubation, occasionally preening or changing perches. This particular male generally left to hunt between 9:30 and 10:30 a.m. and soon returned with prey. Generally this was a whole, unplucked sparrow. The female was soon called off the nest by the "*chup*" calls of the male. After circling the nest site, the female alighted facing the male and each grasped the prey in their beak. They spread their wings, pulling and uttering soft "*ki-ki-ki-ki-kee*'s." The male then let go and the female flew to one or another of her favourite plucking trees to eat. The male went directly to the nest and remained on



Adult male Merlin

Lynn W. Olipha

he eggs until the female returned to the nest. The time spent off the eggs probably never exceeded 2 or 3 minutes. The longest single time I recorded for the male on the nest was 1 hour. The female often perched near the nest, preening and sunning after eating before relieving the male. I do not know if the male brooded the young.

The method of prey transfer after the female stopped brooding the young was much different. The female spent nearly all her time perched within 50 feet of the nest when not brooding the young or plucking prey. She was never observed to do any of the hunting, relying solely on the male for her food and food for the young. As the male returned to the nest area, calling with prey in his talons, the female left her perch to meet him. After several aerial maneuvers, the prey was taken from the male in the air and carried to a tree for plucking.

The prey species differed significantly from reports in the literature, undoubtedly because of the different abundances of possible prey species in the urban environment. All prey observed were sparrow-sized birds. At one time an attempt was made to identify the species taken. Frequently the prey could be positively identified through binoculars. Alternatively feathers were collected as the birds were plucked, or feathers and other parts collected under favourite plucking trees. House Sparrows were common: 23 were positively identified through binoculars; 14 other small birds were thought to be this species; another 12 Sparrows were identified from feathers and body parts collected near the nest. Three other species were identified from remains: Cedar Waxwings (3), Tree Swallows (2), Horned Lark (1), and one fledgling was observed eating a Cedar Waxwing. It is estimated that fully 90 per cent of the prey taken at this nest consisted of

House Sparrows. It is well known that predators will take advantage of unusual prey densities. The urban environment obviously provided a very good population of House Sparrows which were heavily preyed upon.

The hunting efficiency of the male was notable. On several occasions he was seen to leave his perch and return within minutes with prey. On at least two occasions he was observed bringing prey to the female and returning with a second sparrow before she had plucked the first. There is a possibility that some prey may have been cached and then retrieved. This tendency to stash food away is well known in captive falcons and could lead to erroneous ideas of their hunting efficiency. The male was observed to pursue birds unsuccessfully on four occasions (two House Sparrows and two American Robins) from his normal perch near the nest site. There has been a tendency to assume that predatory birds do not hunt near their nest. Although the male generally hunted at some distance from the nest (possibly as far as 2 or more miles), he obviously was not inhibited near the nest if the opportunity presented itself.

The female was largely ignored by potential prey species. Robins, blackbirds, sparrows and warblers were all observed perching within 10 feet of the female on different occasions. As noted before, the female was never observed hunting. She was actively molting during this time while the male apparently had not yet begun to molt. She alone fed the young as far as could be determined and, generally, prepared the food (some plucked, partially eaten birds were brought in by the male). The female invariably ate the head of the prey before plucking and presenting it to nestlings. Prior to their hatching she ate the entire carcass and after hatching she was seen occasionally to eat more than the head if the young were well fed.



Juvenile male Merlin nine days after fledging, with sparrow.

Lynn W. Oliphant

Fledging takes place when the young are about a month old. Their flight feathers are still actively growing at this time and down still adheres to the new feathers. For the first few days the young remain close to the nest, attempting short flights to neighbouring trees.

At one nest, the first young to attempt a flight landed in a backyard swimming pool. Luckily it was fished out and a very bedraggled young Merlin was resuscitated through the efforts of Drs. Jan Brigden and Rhea White, veterinarians at the Western College of Veterinary Medicine. This young male was released at the nest site at noon the same day and was able to make a rather strong flight of about 100 feet. His perching ability and distance judgment were not terribly good however. After missing the roof of a house he hung clinging to the eaves side for several minutes before launching off into space again. His primaries and tail feathers were estimated to be about three-quarters grown at this time.

During the first 1 to 2 weeks, the young move farther afield but remain in the general vicinity of the nest. They do not attempt to hunt during this time. They seem to totally ignore or simply watch with interest potential prey that fly very close to them.

After a week out of the nest, their powers of flight are considerable. Of-

ten the whole brood will fly off to meet the adult female as she flies in with prey. They all scream loudly attempting to snatch the prey from the female, who often leads them around a short while before letting one take the prey.

The young began to disperse during the second week out of the nests. Presumably they began hunting on their own about this time or at least accompanying the adults to their hunting areas. In late summer immature Merlins were often seen hunting singly in the fields north of the University and in Saskatoon itself (hawking dragonflies).

This small "city falcon" has much to offer the urban bird watcher. They are well enough adapted to man and the urban environment to allow close observation of their nesting behaviour. During the winter they can often be seen pursuing prey such as Bohemian Waxwings through residential areas in our large cities. Once you positively identify your first "city falcon," you'll probably notice they are around all year.

¹CRAIGHEAD, F., and J. CRAIGHEAD. 1940. *Nesting Pigeon Hawks*. Wilson Bull. 52:241-248.

²FOX, G. A. 1964. *Notes on the western race of the Pigeon Hawk*. Blue Jay 22: 140-147.

³LAWRENCE, L. de K. 1949. *Notes on nesting Pigeon Hawks at Pimisi Bay, Ontario*. Wilson Bull. 61:15-25.

* * * * *

MAKING MILK FROM SAWDUST

Most folks might think sawdust proper food only for the little wooden cows in baby's toy Noah's Ark, but the United States Forest Products Laboratory at Madison, Wis., finds that really high-producing dairy cows give just as much milk when hydrolyzed sawdust forms a third of the feed mixture.

Nature Magazine, April, 1924. Vol. 3, No. 4

SHORT-EARED OWLS NEAR EDMONTON, 1970-1973

by KEN TRANN*

The December, 1973, issue of the *Blue Jay* contained a report entitled "1972 Alberta Raptor Banding Report" in which Chris Rees wrote, that "Two large concentrations of Short-eared Owls could be noted, one north and one south of the city of Edmonton. Several members of the group worked very hard in the area south of the city finding 18 to 20 nests." I was one of the members most active in the area, and I thought a more comprehensive account might be interesting to others.

This report really begins 2 years earlier. In April, 1970, north of Edmonton, near Namao, wherever we drove or walked in an area of approximately 25 sq. mi., an owl of this species could be observed flying over fields or perched on a fence-post. They frequented fields with grass or stubble or grassy edges of dirt fields or grassy ditches. The birds were studied as often as possible during the next month. We plotted territories on maps and watched courtship displays. We were able to locate at least 20 pairs. The first nest was found on May 20, 1970, in a grassy area bordering a grain field. Between May 20 and June 22 we found 16 nests in this area in all stages of development. For example, on May 26 a nest was found containing 3 eggs and 2 nestlings and on June 22, almost a month later, another nest was found containing 6 eggs.

Many nests were found in stubble but they were usually destroyed by farming operations. On three occasions,

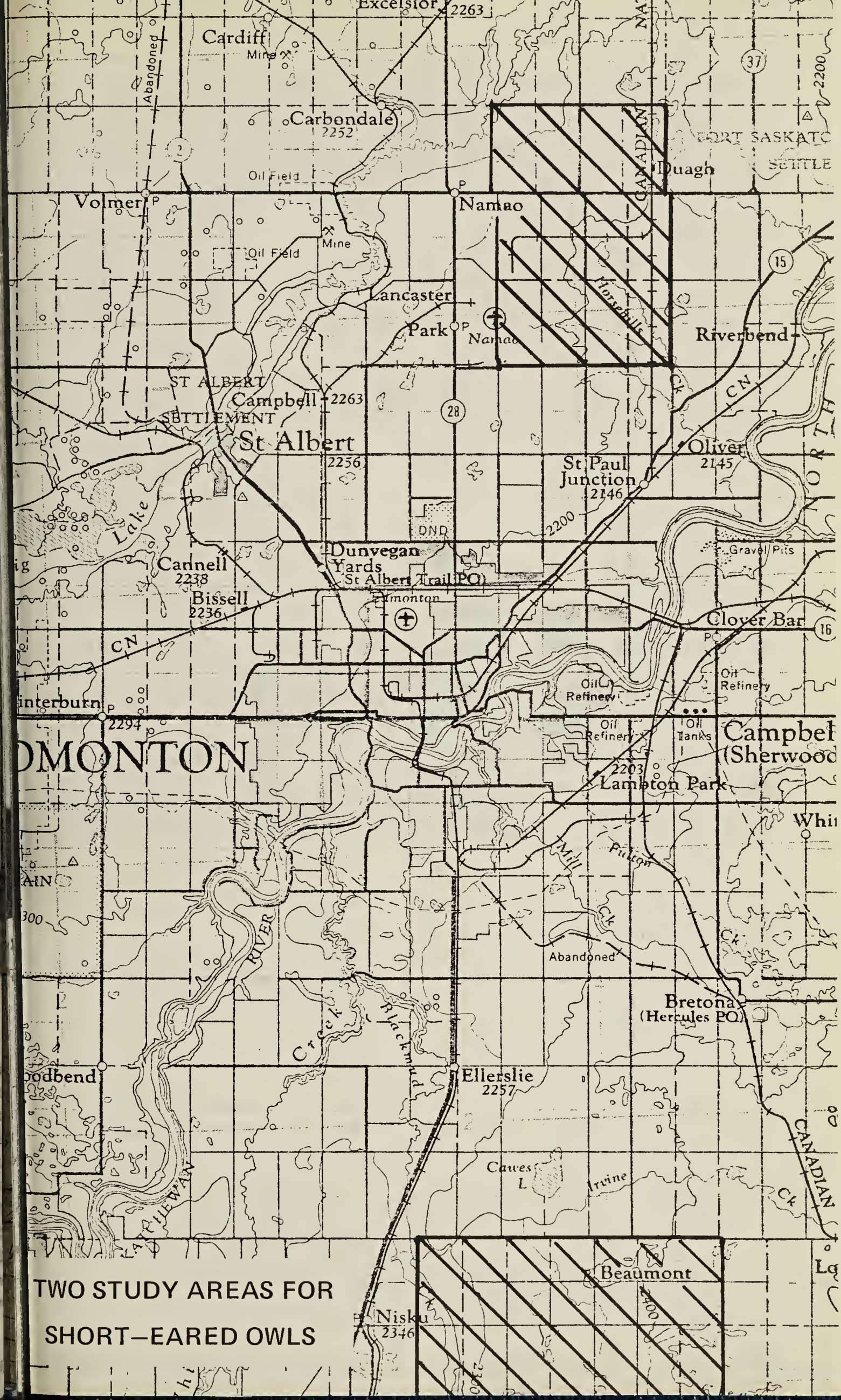


Chris Rees

Silhouette of Short-eared Owl on fence-post

to prevent destruction by the plow, we asked the farmer's permission to erect warning poles 10-15 feet on either side of the nest. When a farmer saw the marker he worked around the nest. Co-operation was excellent whenever we alerted the farmers but we often had trouble finding out who owned the land. Consequently, we were too late to save some nests. Many nests were destroyed by the plow, some by

*5823 121 Ave.,
Edmonton, Alta.



TWO STUDY AREAS FOR
SHORT-EARED OWLS

TABLE 1
Individual Short-eared Owl Nest Data

<i>Nest No.</i>	1970		<i>Nest No.</i>	1972	
	<i>Eggs & Young</i>	<i>Fledged Young</i>		<i>Eggs & Young</i>	<i>Fledged Young</i>
1	5	2	1	8	8
2	9	9	2	4	4
3	1	1	3	10	6
4	1	0	4	4	4
5	7	7	5	10	8
6	5	0	6	9	9
7	1	0	7	5	5
8	7	7	8	6	6
9	3	0	9	9	9
10	6	0	10	5	5
11	5	0	11	8	8
12	5	0	12	9	9
13	5	5	13	4	4
14	3	3	14	2	1*
15	6	6	15	4	4
16	5	1	16	2	2
Total	74	40		99	92

% fledged each year 54%

93%

% fledged both years 76%

*See text – Redtail Predation.

predators and some were deserted, cause unknown.

Short-eared Owls were noticeably absent in 1971 both in the 1970 and 1972 study areas. The appearance and disappearance of these birds depends entirely on the availability of prey, which is almost exclusively mice. On

one occasion, however, I frightened an owl away from a freshly killed Savannah Sparrow, but A. C. Bent lists 75% of the prey as mice and 25% as birds and insects.¹

In 1972 a 25 sq. mi. area was studied near Beaumont, south of Edmonton. Birds were first seen (2) in early April

TABLE 2

<i>Year</i>	<i>Total Nests</i>	<i>Complete</i>	<i>Incomplete*</i>	<i>Total Failures</i>
1970	16	11	5-4 failed 1 (3 young)	8
1972	16	14	2-4 young (2 per nest)	0

*Nests found with young in advanced stages or nests that were destroyed before completion.



Female Short-eared Owl on nest

Chris Rees

By the end of April, birds could be seen wherever one travelled within this area. The habitat was similar to the Namao site: open country, grain fields, grassy ditches and mice in abundance. Between May 30 and July 4 we found 16 nests. Clutch size varied from 4 to 10 eggs. Some nests were found in advanced stages of development, so the original clutch size is unknown. Because young may leave the nest 2 to 3 weeks after hatching, when a nest was found containing few birds we called it an incomplete clutch. We searched the immediate

TABLE 3

Clutch Size (complete clutches only)

Clutch	1970	1972
4	0	4
5	6	2
6	2	1
7	2	0
8	0	2
9	1	3
10	0	2
Total	11	14



Young Short-eared Owl, 2-3 weeks old

Chris Reece

area but could find nothing. Because they are known to crawl some distance, it is conceivable that these nests contained more young at an earlier date.

Hatching was considerably more successful in 1972. Nests were not hindered by farming operations as was the case near Namao in 1970. On one field trip I observed a Short-eared Owl attacking a Red-tailed Hawk. Through binoculars I saw the hawk drop its cargo. I ran out to the field and found a young Short-eared Owl, slightly ruffled but unharmed! On further investigation, I found the nest with the female and one young, both dead. The carcasses were fresh with no clues as to how they were killed.

Territorial establishment was not observed. A pair could be found

nesting in a field with another pair only a short distance away. It was common to observe four to six birds hunting the same tract of land. Although we found 16 nests in 25 sq. mi., other pairs successfully concealed their nests. We observed the familiar warning signals from disturbed owls but closer scrutiny of the area revealed nothing. Their behaviour when an observer approached a nest is worth mentioning. The male usually appeared high above when an observer was still 1/4 mile from the nest. As one got closer to the nest and the hidden female, the male dropped lower and lower — circling and “barking”. When the nest was just a few feet away the male crash dived to the ground — and “crash” is not an exaggeration. He would dive towards the ground away from the nest, hit with force enough to



Ken Trann and Brian Nicolaie banding young Short-eared Owls

Chris Rees

seem to injure himself, roll over and then look back, with wings spread, appearing severely damaged. It is an amazing performance and I have witnessed it many times. It is the surest clue to use when searching for the nest.

I should also warn an observer to be careful around a nest containing young birds. On occasion adult birds will attack. While trying to band young at one nest, I was rapped on the head by an adult bird three times before I decided to retreat. This did not occur when I was with someone. In fact, I had never heard of it happening before with this species.

In 1973, Short-eared Owls were again scarce. Some birds were seen

near Beaumont in April but a return visit in May revealed no owls of this species. Long-eared Owls and Marsh Hawks, also dependent on an abundance of mice, were also scarce. It is too early to determine whether there is a 2-year cycle in these areas but 1974 should add further information.

I would like to thank R. E. Gehert for the encouragement he offered, Chris Rees for the photographs and Rick Svrcek and Brian Nicolai for contributions and assistance.

¹BENT, A. C. 1961. *Life histories of North American birds of prey. Part Two.* Dover Publications Inc., New York, New York, p. 172.

* * * * *

No house should ever be on any hill or on anything. It should be of the hill, belonging to it, so hill and house could live together each the happier for the other.

Frank Lloyd Wright

RESPONSE OF A HAWK OWL TO A LURE

by B. M. FISHER*

The Hawk Owl is a scarce resident in Alberta. It was formerly common but its numbers have been considerably reduced in recent years.⁴

On October 30, 1973, four students on an ecology field trip found a Hawk Owl in a black spruce-muskeg community, 2 miles N-NE of Looma, Alberta. (Lat. 53° 23'N, Long. 113° 15'W). We observed the owl between 3:00-4:30 p.m. on an overcast day with gusting winds, 20-30 mph. The temperature was about 4°C.

To lure the owl, a white string was tied around the neck of a dead Meadow Vole (*Microtus pennsylvanicus*) which was thrown in the vicinity of the perched owl, then pulled across the ground erratically. A similar technique for studying hunting behaviour of Great Gray Owls proved successful using a study skin of a Meadow Vole.²

The owl first swooped down to within 5 feet of the ground and then straight up to a perch in a black spruce (*Picea mariana*). Dr. D. L. Pattie approached to within 50 yards of the owl and failed on three initial attempts to lure it. The owl was constantly turning in all directions and on a few occasions spotted the vole but instead of attacking, swooped down to within 8 feet of the ground and straight up to the perch in a black spruce directly above Dr. Pattie. It then had a better view of the moving vole but seemed reluctant to attack. From 50 yards away, I managed to attract the owl's attention

to the vole by alternating quick movements with short pauses. The owl immediately flew within 20 yards of me. Within 10 seconds it swooped down without a flap of its wings and with both legs extended, landed on the back half of the vole. The owl, 8 feet in front of me, was holding its wings out as if balancing itself. I pulled on the string; at this movement the owl struck the vole's head with two sharp thrusts of its beak. Then it picked up the vole with its beak and flew into the forest. However, the string became entangled in bushes and after several unsuccessful attempts to fly off with its "prey" the owl flew away. We retrieved the vole and threw it into the trees, 15 feet in front of us. The string dropped over a spruce bough so that the vole was dangling in mid-air. Upon jerking the string, the owl swooped down to a branch a foot away and jumped onto the vole. After 30 seconds, it released the vole and flew 10 yards to a dead tree stump 12 feet off the ground. Again the vole was retrieved and thrown into the trees 10 yards in front of us. The owl swooped down without flapping its wings and landed a foot from the vole which was resting on a branch beneath a dense spruce bough. The owl walked about on the bough, tipping its head 90° to each side and looking at the vole; it then reached through the dense spruce bough and picked the vole up in its claws. After 30 seconds, the owl released it and flew to its perch.

Next we untied the vole and threw it into the woods about 20 yards from the owl. It at once swooped down in its characteristic dive, seized the vole in

*8030 - 132nd Ave.,
Edmonton, Alberta.
T5C 2B4

its claws, picked it up in its beak, flew to its perch, and began to pick and pull at the vole's head, holding the body on the stump with one foot. For the first 3 minutes the owl constantly surveyed its surroundings and picked at the vole with a meagre effort. After a Black-billed Magpie landed nearby, the Hawk Owl made no attempt to eat its prey but watched the magpie closely. The moment the magpie flew away the owl began tearing the head off the vole, devouring it whole. The remainder of the vole was devoured in smaller pieces — fur, flesh and viscera.

The tameness and curiosity of the Hawk Owl was evident, as mentioned by E. T. Seton in 1890.¹ It appeared to locate the vole mostly by sight as it was upwind prior to all attacks. The owl was interested in the vole mainly when it was moving. This same observation has been made on Great Gray Owls.²

The Hawk Owl we observed was south of its boreal breeding range in which it usually winters. However, on rare occasions shortages in food forces these birds south.¹ This individual was likely hungry, explaining its strong response to the lure. Smith had a nesting Hawk Owl take a dead "field mouse" off a stick.⁵

I am grateful to Dr. D. L. Pattie and Darrell J. Robinson for their assistance in preparing this note.



Hawk Owl

Fred W. Lahrman

Hawk Owl

Robert J. Long



¹BENT, A. C. 1961. *Life history of North American birds of prey. Part two.* Dover Publications Inc., N.Y., N.Y. 482 pp.

²BRUNTON, D. F. and R. PITTAWAY, Jr. 1971. *Observations of the Great Gray Owl on winter range.* Can. Field-Nat. 85: 315-322.

³GODFREY, W. E. 1966. *The birds of Canada.* Nat. Mus. of Canada. Bull. No. 203, Ottawa, 428 pp.

⁴SALT, W. R. 1972. *The birds of Alberta.* Queen's Printer, Gov't. of Alberta. Edmonton, Alberta. 511 pp.

⁵SMITH, N. F. 1922. *The American Hawk Owl.* Can. Field-Nat. 36: 68-71.

SOUTH AMERICAN RECOVERIES OF FRANKLIN'S GULLS AND SWAINSON'S HAWKS BANDED IN SASKATCHEWAN

by C. STUART HOUSTON*

While the gardener studies his spring catalogues and the golfer receives vicarious satisfaction watching television matches in sunnier climes, the bird bander's winter is brightened up by monthly batches of recoveries from the banding office. The greatest thrill of all is a recovery from another continent.

After my first 27 years of banding, my most distant recoveries were of a Pectoral Sandpiper far inside Siberia and a Common Tern from the Cook Islands.^{4 3} Interesting waterfowl recoveries included a Pintail shot near Anadyr', Chukotka, U.S.S.R., and six Blue-winged Teal shot in South America, two in Venezuela and four in Colombia.

Well aware of Fred Bard's banded Franklin's Gull recovered in Peru and of Hartley Fredeen's Swainson's Hawk recovered in northern Argentina, I patiently but confidently waited many years for my first South American recoveries of these two species.^{6 5} The past two winters have finally produced the following reports, including one from Central America.

Franklin's Gull (banded as flightless young)
564-38468, Banded July 6, 1972, at Rice Lake,

*863 University Drive, Saskatoon, Saskatchewan.
S7N 0J8.

19 miles west of Saskatoon (520-1070)**

The banding crew that day included Stuart, Mary and David Houston, Arnold Nijssen, Wayne Renaud, Alan Smith, Allan Moulin and Murray Akre. The gull was found dead February 3, 1973 by Rigoberto Guerra-V. at Puerto Caldera, Chile (270 South — 0705).

Swainson's Hawk (all banded as nestlings).

787-85464. Banded July 19, 1970, in nest found by Nancy Robinson on Bob Robinson's farm west of Simpson (513-1054). Shot May 5, 1971, by Eligio Walter on his ranch 9 kilometers southwest of Susana, which in turn is 10 km. south of Rafaela, in the province of Santa Fe, Argentina (312 South — 0614).

787-85406. Banded July 19, 1969, thanks to Gary Anweiler, at the north end of Last Mountain Lake (512-1051). Shot February 29, 1972, by Atilio Casce at Marcos Juarez, Argentina (324 South — 0620).

847-90101. Banded July 14, 1968, in a nest reported to me by Dr. Jack Millar, one mile south of Floral (520-1062). Found dead November 30, 1972, by Ricardo Miguel Lawlor near Young, Uruguay (324 South — 0573).

617-21641. Banded August 1, 1971, by subpermittee Wayne C. Harris on Leland Greenfield's farm west of Govan (512-1050). Shot November 14, 1971, by A. Bernardo Lopez — D., at El Jicaral, El Salvador (140 — 0894).

617-22125. Banded July 21, 1973, at Smiley (513-1092). Shot November 23, 1973, by Omar Fernandez at Firmat, Sante Fe, Argentina (332 South — 0612).

Discussion:

The Chile recovery of the Franklin's Gull was from the Pacific coast, about

**520-1070 is the computer coordinate of the banding location. It signifies the 10-degree block between 52° 00' and 52° 10' North and between 107° 00' and 107° 10' West. Latitudes are North except when South is specified.



Fig. 1. CHILE: Franklin's Gull. ALL OTHERS: Swainson's Hawks. Squares represent direct recoveries (same year); triangles, January 1 to June 30 of the following year; circles, more than one year old. Southernmost circle was a hawk banded by Hartley Fredeen.

400 miles north of Valparaiso, whereas the winter range of the species extends about 400 miles south of Valparaiso to Mocha Island.¹

Louis M. Moos, from 12,535 Franklin's Gulls banded at Freezeout Lake, Montana, has had 21 recoveries, including one from Honduras, four from Peru and two from Chile.⁷

In a similar proportion, I have had only two other recoveries from the 1,177 Franklin's Gulls banded through 1972: one found with a broken wing east of Stalwart, Saskatchewan, August 17 of the year it was banded (1966), and one shot at Lake Texoma, Oklahoma on November 5 of the year it was banded (1970).

The Argentina recoveries of Saskatchewan-banded Swainson's Hawks (including Fredeen's) are all on the west side of and within 80 miles of the

Parana River, from Rosario to a point 100 miles upstream. The Uruguay recovery is within 40 miles east of the Uruguay River, which forms the Argentina-Uruguay boundary. These five recoveries fit within a 250-mile diameter circle, suggesting this is a commonly used portion of the "pampas of Argentina" mentioned as the normal winter range of this hawk.²

My Swainson's Hawk recoveries listed above represent one from each of the 5 years, 1968 through 1971, when 22, 64, 40 and 38, respectively, were banded and 1973, when 52 were banded. No extra-continental recoveries were received from the 69 banded prior to and including 1967, but additional distant recoveries might almost be expected from the 146 banded in the peak year of 1972 and the 83 banded in 1974. I have also had 10 Swainson's recoveries from this continent, six of which have been published previously, including the first state record of this species for Alabama.³

The distances involved are impressive — a direct-line distance of 5,700 miles for the Franklin's Gull and about 6,500 miles for the Swainson's Hawks, although the most probable route through Central America would add 700 miles to the latter figure.

¹AMERICAN ORNITHOLOGISTS' UNION, 1957. *Check-List of North American birds*. Fifth edition, Baltimore, 691 pp.

²BROWN, L., and D. AMADON, 1968. *Eagles, hawks and falcons of the world*. McGraw Hill, New York, 2 vols., 945 pp.

³HOUSTON, C. S. 1962. *Common Tern recovery from the Cook Islands*. Blue Jay 20: 58-59.

⁴HOUSTON, C. S. 1965. *Siberian recovery of Pectoral Sandpiper*. Bird Banding 36: 112-113.

⁵HOUSTON, C. S. 1968. *Recoveries of Swainson's Hawks banded in Saskatchewan*. Blue Jay 26: 86-87.

⁶HOUSTON, C. S. 1970. *Saskatchewan bird banders — Fred G. Bard*. Blue Jay 28: 150-156.

⁷MOOS, L. M. 1973. *Gull banding in Montana*. Proc. Mont. Acad. Sci. 32: 20-23.

NESTING PIPING PLOVER IN SASKATCHEWAN

by WAYNE RENAUD*

The Piping Plover is likely the least known of the plovers that occur regularly in Saskatchewan. The species' centre of abundance lies along the east coast of North America from Virginia to Newfoundland and its numbers decrease westward through Nebraska, South Dakota and southern Ontario to near the mountains in southern Alberta.⁷ Even as far west as Manitoba it occurs commonly along many of the sandy lakes, but in Alberta, at the extremity of its range, there are only eight known breeding localities.¹²

There are few areas in Saskatchewan where the species can be considered common. The Quill Lakes apparently have been a traditional breeding location; Ferry reported numbers of breeding birds there in 1909.⁵ On July 5, 1972, Wayne Harris and the writer found a group of 43 adults in a shallow bay 2 miles northeast of Dafoe and on July 13, 1973, John Rowe and the writer, during an International Biological Program Natural Area survey, found a flock of 13 adults at Middle Quill Lake (10 miles north of Wynyard). Although Bent listed the plover as "abundant" at Big Stick Lake in 1906, the present status of the species there is not known. Like nearby Crane Lake, the drought of the 1930's and the construction of dams on creeks draining into the lake have resulted in low water levels. When visited by Godfrey in 1948 the lake was nearly dry and no plovers were seen,⁶ and as recently as July, 1973,

the lake contained no water (Kerry Finley). With the exception of the Quill Lakes, Big Stick Lake (at least, formerly), and Redberry Lake, where C. S. Houston has banded young in 9 years from 1964 to 1973, the species is uncommon as a breeder in southern Saskatchewan. Most of the other cited localities have only one or two definite breeding records and there are large areas of the south where the species has not even been reported as a migrant.

Although the nests of coastal birds consist of "a slight hollow in the sand . . . (often) lined with bits of shell,"¹⁷ Saskatchewan birds show a decided preference for pebble beaches. Of five nests examined by the writer in 1972 and 1973, all were located on beaches with little or no vegetation and covered to some degree by small stones. Provided with this nesting habitat, the plover will tolerate water conditions ranging from freshwater lakes and reservoirs to excessively alkaline sloughs. A nest near Biggar was built on the edge of a crusted alkaline lake which was dry by late June except for a brackish spring, but the four young were successfully raised. A nest north of Bradwell was in a similar situation but no springs were present and the slough had dried up completely by July.

The nest is among the easiest of the shorebird nests to locate since the birds are tame and easily visible when they return to their nest on the open beach. Wilcox, in a 20-year study on Long Island, New York, was able to find up to 11 nests in one hour:

*P.O. Box 327,
Rosetown, Saskatchewan.



Piping Plover

Robert E. Gehlert

"The quickest and easiest way to find nests is to retire to a car, or other place of concealment and watch the adults with binoculars. They will soon go back to the nest, if one is at least 300 feet from the nest."¹⁸

In Saskatchewan, the birds at the nests examined were even less wary. Once both adults had been located, I retreated and sat still in complete view of the plovers. The incubating adult would return and settle on the eggs within 5 minutes if I was over 50 yards from the nest. Since the egg shell markings blend well with the surroun-

ding beach, the eggs are nearly impossible to find unless the adult is watched to the nest.

This article lists 15 localities for which there is definite evidence of breeding. Five of these have not been previously published. In addition, four suspected breeding localities are mentioned. Although the sources of the June records at Fife and Crane Lakes did not suggest the possibility of breeding, there is at least some circumstantial evidence to suggest it. Likely, more thorough coverage will

establish the species as an occasional breeder throughout the southern third of the province. That the range may soon be extended to include north-eastern Montana is indicated by the presence of suspected breeding birds near Dagmar in 1972 and 1973.^{11 15} At present, the known breeding range excludes extreme southern Saskatchewan and all of Montana.⁷

I wish to thank Kerry Finley, Wayne Harris and Dr. C. S. Houston who critically read early copies of the manuscript; Dr. Houston also supplied unpublished records. All of the writer's observations, except those near Biggar, were made while employed as a summer student with the Canadian Wildlife Service in 1972 and

1973 and by the Department of Plant Ecology, University of Saskatchewan in 1973.

List of breeding localities of the Piping Plover in Saskatchewan.

1. Jackfish Lake, 25 miles north of North Battleford (definite). Nest with 4 eggs on Common Tern island, July 12, 1963. (C. S. Houston, pers. comm. August, 1972).
2. Redberry Lake (definite). Flightless young banded as follows: 1964 (9), 1965 (2), 1966 (3), 1967 (3), 1968 (3), 1969 (3), 1971 (3), 1972 (2) and 1973 (2). (C. S. Houston, pers. comm. August, 1972, and December, 1973).

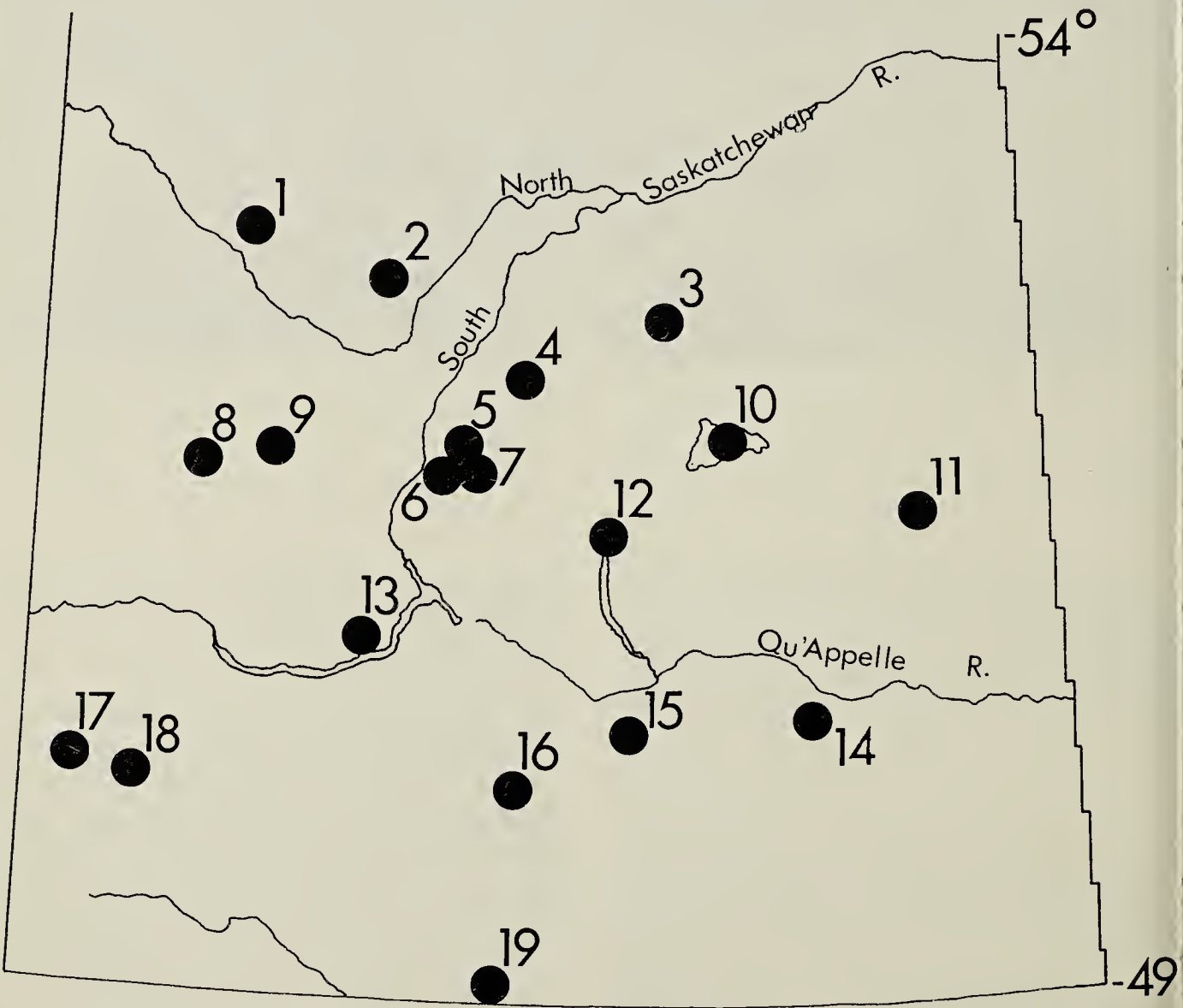


Figure 1. Breeding localities of the Piping Plover in Saskatchewan. Numbers refer to records in list of breeding localities.

3. Ranch Lake, 6 miles east of Lake Lenore (possible). "A rare summer resident (in 1972). They were recorded only on Ranch Lake on a stony stretch of shoreline along the west side. My first date was May 24 (2). They were not seen again until June 7 and were present thereafter. On July 14 a total of 4 was seen at this area, one of which had no neck ring and was taken to be a juvenile. I could not find the nest but I suspect that they did breed here."⁴ (Wayne Harris).
Three were again noted in the same area May 27, 1973. (Wayne Harris, pers. comm., July, 1973).
4. Buffer Lake, 4 miles northeast of Vonda (definite). Nest with 4 eggs, May 25, 1972. The behaviour of at least five adults on a 1/4-mile stretch of shore indicated that there may have been two other nests nearby. (A. Nijssen and W. Renaud).
5. Slough, 5 miles north of Bradwell (definite). Nest with four eggs, May 23, 1972. (W. Renaud).
6. Slough 7 miles north of Dundurn (definite). Nest with one egg on June 5 contained 4 eggs on June 8, 1966.⁸ (J. A. Slimmon).
7. Bradwell Reservoir 2 miles southeast of Bradwell (definite). Nest with four eggs 30 feet from water on gravel dike, May 30, 1973. (W. Renaud).
8. Opuntia Lake, 4 miles east of Plenty (possible). Adult feigning broken wing, July 12, 1972. (R. Isbister, D. Neiman, W. Renaud).
9. Lake, 17 miles south southwest of Biggar (definite). Nest with four eggs, June 3, 1972. (D. and W. Renaud).
10. Quill Lakes (definite). "A nest containing 4 eggs was found on an island on July 4 (1909). Subsequently the species was found distributed along the south shore of Quill Lake in the proportion of about one pair of birds to the mile. At this time, July 4-5, nearly every pair had broods of young varying in size from birds just hatched to those the size of a sparrow. On June 14 Mr. Barnes saw a pair on an island acting as if they were nesting."⁵

Nest with 4 eggs on island in Middle Quill Lake (10 miles north of Wynyard), July 14, 1973. (W. Harris, W. Renaud, J. Rowe).
11. Good Spirit Lake, 9 miles southwest of Canora (definite). "One nesting pair, south shore . . . June 23, 1936."¹⁰
12. Last Mountain Lake (definite). "Rare summer resident (at the north end of the lake in 1969). I found them only at one place, a large alkali slough behind Watertown (at the north end of the lake). I saw one here on June 10, a pair and a single on July 11, a single immature (?) bird, with a broken neck ring, on July 17. Todd found them breeding in this area in 1932. He took a set of 4 eggs on June 2, and records a set of 4 eggs and some downy young on June 22 by Bard, at Imperial Beach."¹¹
13. Clearwater Lake near Beechy (definite). "A female and 2 downy young were seen on August 10, 1967, near an alkaline slough south of Clearwater Lake. The young were collected and are now in the University of Saskatchewan Biology Museum."⁹
14. Deep Lake, south of Indian Head (definite). "This species did not reach Deep Lake . . . until May 16, 1892. In three days they were common. Shortly after they dispersed to breed, only a few pairs remaining at the lake.
"On June 18th, a nest containing three eggs was discovered on a long point extending into Deep Lake. It was in a shallow hole in sand behind a large stone, and no grass or weeds within twenty feet of it."¹⁴ (Spreadborough).
15. Stony Beach Lake, 16 miles west-northwest of Moose Jaw (definite). Nest with eggs May 31, 1959.² (G. Fox and F. Brazier).
16. Old Wives Lake (definite). "Mitchell (1924) found Piping Plovers breeding at the lake."¹³
". . . appeared from their behaviour to be breeding (on the Isle of Bays in 1969)."¹⁷

17. Big Stick Lake (definite). "Abundant . . . breeding on the gravel beaches. No eggs were found but downy young were found on July 21, 1906."³

18. Crane Lake (possible). "In 1948, 3 adults were observed . . . at Crane Lake on June 15."⁶ (S. D. MacDonald and W. E. Godfrey).

19. Fife Lake, 4 miles northeast of Rockglen (possible). "1940: on June 5 and 6 a pair was seen each day."¹⁶

¹ANWEILER, G. G. 1969. *The birds of the Last Mountain Lake Wildlife Area, Saskatchewan*. Canadian Wildlife Service Report.

²BELCHER, M. 1961. *The birds of Regina, Saskatchewan*. Sask. Nat. Hist. Soc., Special Publication No. 3. 76 pp.

³BENT, A. C. 1907. *Summer birds of southwestern Saskatchewan*. (part I). Auk, 24:407-430.

⁴CALDWELL, R., R. MacLENNAN, W. HARRIS and H. WOLOWSKY. 1972. *An ecological survey of Ranch Lake, Saskatchewan*. Canadian Wildlife Service/Department of Natural Resources joint report.

⁵FERRY, J. 1910. *Birds observed in Saskatchewan during the summer of 1909*. Auk, 27:185-204.

⁶GODFREY, W. E. 1950. *Birds of the Cypress Hills and Flotten Lake regions, Saskatchewan*. Nat. Mus. Canada Bull., No. 120. Biol. Ser. No. 40, 96 pp.

⁷———. 1966. *The birds of Canada*. Nat. Mus. Can., Bull. No. 203, Biol. Ser. No. 73. Queen's Printer, Ottawa. 428 pp.

⁸GOLLOP, J. B. (editor). 1966. *Saskatoon Bird Review* (mimeo.). Saskatoon Natural History Society 1:5.

⁹GOLLOP, M. A., and A. R. SMITH. 1969. *Bird notes for the Elbow region, Saskatchewan*. Blue Jay, 27:80-81.

¹⁰HOUSTON, C. S. 1949. *The birds of the Yorkton district, Saskatchewan*. Can. Field-Nat., 63:215-241.

¹¹——— (editor). 1972. *The nesting season, June 1, 1972, to August 15, 1972. Northern Great Plains region*. American Birds, 26:869-872.

¹²KONDLA, N. G., and H. W. PINEL. 1973. *Breeding records of 19 species of birds in southern Alberta*. Blue Jay, 31:153-157.

¹³KNIGHT, L. M. 1967. *The birds of the Moose Jaw area, Saskatchewan*. Moose Jaw Nat. Hist. Soc. Special Publication.

¹⁴MACOUN, J., and J. M. MACOUN. 1909. *Catalogue of Canadian birds*. Geological Survey Branch, Dept. of Mines, Ottawa.

¹⁵RENAUD, W. E. (editor). 1973. *Spring Migration, April 1, 1973, to May 31, 1973. Northern Great Plains region*. American Birds, 27:785-788.

¹⁶SOPER, J. D. 1970. *Unpublished field notes on the birds observed and collected in the province of Saskatchewan, Canada, in 1914, 1921, 1927 and from July, 1937 to September, 1947*. Zoology Dept., University of Alberta, Edmonton.

¹⁷VERMEER, K. 1970. *Aquatic breeding birds of the Isle of Bays, 1969*. Blue Jay, 28:86-87.

¹⁸WILCOX, L. 1959. *A twenty year banding study of the Piping Plover*. Auk, 76:129-152.



Buff-breasted
Sandpiper

R. E. Gehlert

WINTERING RECORD OF BLACK GUILLEMOTS OFF NORTHERN MANITOBA

by ROBIN BEST*

Black Guillemots have been recorded in Manitoba approximately 10 times since they were first reported by Preble in 1900.^{1 2 3}

With one exception, these records are for the summer and fall months, ranging from June 28 to October 10, or roughly the ice-free season for the Churchill area, where these sightings have been made.

The only winter record for the province is a specimen that was found dead near Morris, Manitoba, on November 12, 1966. A description of the specimen, and a review of the previous literature on the occurrence of this species in the province has been published in the *Blue Jay*.³

On February 21 and 22, 1974, 200-300 guillemots were observed in the ice-pack approximately 45 to 80 miles offshore from the Churchill and Cape Churchill coastline during a Polar Bear survey by the Canadian Wildlife Service (H. P. L. Kiliaan and B. M. Knudsen, pers. comm.). The birds were seen in small flocks of 15 to 40 birds in the large leads in the pack-ice. An additional sighting of a single bird was made by the author on March 21, 1974, again, some 40 to 50 miles northeast of Churchill.

On March 8, 1974, a live adult Black Guillemot, in full winter plumage, was found near Mile 4 on the Churchill road by two Department of Public Works employees. This bird

later died and was sent to the Manitoba Museum of Man and Nature.

Although the guillemot is known to winter off Southampton Island, James Bay, and "probably about the open leads along the east side of Hudson's Bay . . ." ⁴, there appear to be no records for western Hudson's Bay. It is possible that the Black Guillemot population that breeds and winters in the Southampton Island area moves south in very cold winters, such as 1973-74, when the ice conditions are poor.

These observations constitute the first evidence of Black Guillemots wintering in the waters off Manitoba. A record of the second specimen for the province of Manitoba is included.

I am grateful to David Hatch for his assistance in determining the status of this recent specimen, and in supplying additional information.

¹COOKE, F., A. J. PAKULAK, R. K. ROSS and R. K. SCHMIDT. 1973. *Birds of the Churchill Tundra Biome*. Manuscript. 34 p. Dept. of Biology, Queen's University, Kingston, Ontario.

²JEHL, J. R. jr. and B. A. SMITH. 1970. *Birds of the Churchill region, Manitoba*. Manitoba Museum of Man and Nature Special Pub. 1. 87 p.

³NERO, R. W. 1968. *Manitoba Black Guillemot specimen*. *Blue Jay* 26: 14-15.

⁴SNYDER, L. L. 1957. *Arctic birds of Canada*. University of Toronto Press. 310 p.

Department of Zoology, University of Guelph, Guelph, Ontario N1G 2W1.

FURTHER OBSERVATIONS OF TERNs' EGGS ENCLOSED BY HATCHED EGGSHELLS

by I. C. T. NISBET*

Hatch reported observing seven clutches of Common Terns in a colony in Manitoba in which one of the eggs was partly enclosed by half of the shell of an earlier-hatched egg.² During a 4-year study of Common Terns in Massachusetts, I have observed this phenomenon only twice, although I have examined some 320 nests with marked eggs daily through the hatching period and have made more casual observations at several hundred other nests at the time of hatching.³ However, I have seen the same phenomenon four times in only 92 two-egg clutches of Roseate Terns that were examined daily through hatching.

The most likely reason why this phenomenon should be more frequent in Roseate than in Common Terns is that the former do not remove hatched eggshells from the nest, whereas Common Terns usually do so within 30 minutes of hatching (Cullen¹ and personal observations). Hence the second egg is more likely to be brooded in the nest with a part of the hatched shell of the first and thus to be shuffled into it by accident. Once inside, it is fairly tightly enclosed and is unlikely to be removed by the parent.

It is also likely that the probability of this phenomenon occurring depends on the relative sizes of the eggs. At my main study-colony, Bird Island (41°40'N, 70°43'W), Roseate Tern eggs usually differed more in size within clutches than those of Common

Terns. The average difference between the first and second eggs in 71 clutches of Roseate Terns (which rarely lay clutches of three) was 1.62% (standard deviation 2.54%) in breadth and 4.56% (s.d. 6.57%) in volume. The corresponding differences between first and third eggs in 64 clutches of Common Terns were 1.19% (s.d. 2.23%) and 3.39% (s.d. 5.58%). In only one of the Common Tern clutches did the first and third eggs differ by more than 11 percent by volume, but this difference was exceeded in 11 of the 71 Roseate clutches.

In 1973 I found significantly larger differences in egg-size within clutches in a Common Tern colony at Yarmouth, Massachusetts (41°43'N, 70°15'W). The average difference between first and third eggs in 51 three-egg clutches was 2.24% in breadth and 7.19% in volume, greater even than in the Roseates at Bird Island. In 13 of the 51 clutches the first and third eggs differed in volume by more than 11%. It is significant that both cases of egg-enclosure occurred in this group of 13 clutches at Yarmouth (differences 11.4 and 22.7% by volume, and 4.4 and 5.3% by breadth): both of these clutches fell into the most extreme 10 percent of the 159 three-egg clutches of Common Terns that I have measured in Massachusetts. These data suggest that egg-enclosure is most likely to occur when the last egg in the clutch is very small.

Hatch reported that three of the seven enclosed eggs observed by him

*Massachusetts Audubon Society,
Lincoln, Massachusetts 01773.

failed to hatch.² However, I have recorded no case of hatching failure clearly attributable to this cause in Massachusetts. In four of my six study-nests described above, I removed the enclosing eggshell, but in the remaining two (one Common, one Roseate) I left it on and the chicks nevertheless hatched. More significantly, I have examined several hundred unhatched eggs in eight colonies but I have not yet found a dead embryo in an enclosed egg.

Hatch's observations suggest the possibility that egg enclosure may be more frequent among Common Terns in Manitoba than in Massachusetts. If this is confirmed by subsequent observation, it would be interesting to determine whether it is associated with unusually large differences in egg-size within clutches, or perhaps with an unusual failure of the parents to remove eggshells promptly. It would also be important to determine the level of embryonic mortality in these colonies and to discover whether it is associated clearly with egg enclosure,

or with other factors such as parental neglect or toxic chemicals. A relatively high incidence of hatching failure has been reported among Common Terns in Alberta (Switzer *et al.*^{4 5}; G. A. Fox, personal communication) and in Ontario (M. Gilbertson, personal communication).

This study was supported in part by a grant from the Frederick W. Beinecke Fund. This note is Contribution No. 119 from the Scientific Staff, Massachusetts Audubon Society.

¹CULLEN, J. M. 1960. *Some adaptations in the nesting behaviour of terns*. Proc. XII Intern. Ornith. Congr. : 153-157.

²HATCH, D. R. M. 1973. *Hatched egg-shells covering Common Tern eggs*. Blue Jay 31: 91.

³NISBET, I. C. T. 1972. *Disaster years for terns*. Man and Nature, Dec. 1972: 16-21.

⁴SWITZER, B., V. LEWIN, and F. H. WOLFE. 1971. *Shell thickness, DDE levels in eggs, and reproductive success in Common Terns (Sterna hirundo), in Alberta*. Can. J. Zool. 49: 69-73.

⁵SWITZER, B., V. LEWIN, and F. H. WOLFE. 1972. *Effects of DDE on reproductive success in Common Terns, (Sterna hirundo), at Chip Lake, Alberta*. MS. presented as exhibit USDA-RBTL-9 at public hearings on DDT (Environmental Protection Agency, Washington, D.C.).

CHAPMAN'S 1908 RECORD OF CALIFORNIA GULL NESTING IN MANITOBA

by MARTIN K. McNICHOLL*

Although the California Gull breeds in Saskatchewan and North Dakota, its status in Manitoba is unclear.^{3 11} In 1908 Frank M. Chapman referred to

California Gulls nesting at the Shoal Lakes in his "Camps and Cruises of an Ornithologist" (pp. 319, 345).¹ However, since Chapman gave no details and did not mention Herring Gulls there, Taverner included this record under "Herring Gull" and

*Dept. of Zoology,
University of Alberta,
Edmonton, Alta. T6G 2E1



California Gull

Robert J. Long

referred to the birds as Herring *or* California Gulls.¹² He then commented on the difficulty in distinguishing the species. The late A. G. Lawrence does not refer to Chapman's record in his writings on Manitoba birds, and essentially discounts it by referring to a sight record by C. G. Harrold on October 5, 1923, as the first authentic record for the province.⁷ Elsewhere he referred to another record by Harrold at Whitewater Lake on May 2 or 3, 1924, "and two later on in the month,"

and to one by Harold Mossop at St. Boniface (Winnipeg) on September 10, 1951.^{4 5 6}

The subsequent discovery of its nesting at Dog Lake in 1954 and 1955¹⁰ and of several additional nesting places from 1968 to 1970 in Lakes Winnipegosis and Manitoba and Pelican Lake^{2 13 14} establishes the California Gull as a nesting species in Manitoba,¹³ as predicted by Lawrence in 1924.⁴ However, apart from these breeding records and the above sight

records, few published records of California Gulls in Manitoba are available. Mossop saw one at Lockport on September 19, 1959, and later referred without details to having identified it "several times" in the province.^{8 9}

The new breeding records might tend to make Chapman's old record somewhat more plausible, although additional details would be needed to make it acceptable. In light of this ambiguity, it may be of interest to record that Chapman himself was apparently not prepared to vouch for the accuracy of his identification. A letter dated April 4, 1923, from Chapman to Lawrence is attached inside Lawrence's copy of Chapman's book, now housed in the library of the Delta Waterfowl Research Station. In the letter Chapman states, "I regret to say that I collected no specimens of the Gull which I found at Shoal Lake and cannot, therefore, confirm this identification . . ." Therefore, this record should be considered as invalid.

¹CHAPMAN, F. M. 1908. *Camps and cruises of an ornithologist*. D. Appleton Co., New York.

²EVANS, R. M., D. B. KRINDLE, and M. E. MATTSON. 1970. *Caspian Terns nesting near Spruce Island, Lake Winnipegosis, Manitoba*. Blue Jay. 28: 68-71.

³GODFREY, W. E. 1966. *The birds of Canada*. Nat. Mus. Can. Bull. No. 203, Biol. Ser. No. 73, Ottawa.

⁴LAWRENCE, A. G. 1924. *Observers' reports*. Chickadee Notes. No. 163. Winnipeg Free Press, May 8, 1924.

⁵LAWRENCE, A. G. 1924. *Uncommon records*. Chickadee Notes. No. 170. Winnipeg Free Press, June 26, 1924.

⁶LAWRENCE, A. G. 1951. *Migration reports*. Chickadee Notes. No. 1567. Winnipeg Free Press, June 1, 1951.

⁷LAWRENCE, A. G. 1954. *New nesting record for Manitoba*. Chickadee Notes. No. 1731. Winnipeg Free Press, July 23, 1954.

⁸MOOSOP, H. 1959. *Caspian Terns in migration*. Chickadee Notes. No. 245. Winnipeg Free Press, September 26, 1959.

⁹MOSSOP, H. 1968. *Mythical birds of historic value*. Chickadee Notes. No. 686. Winnipeg Free Press, March 23, 1968.

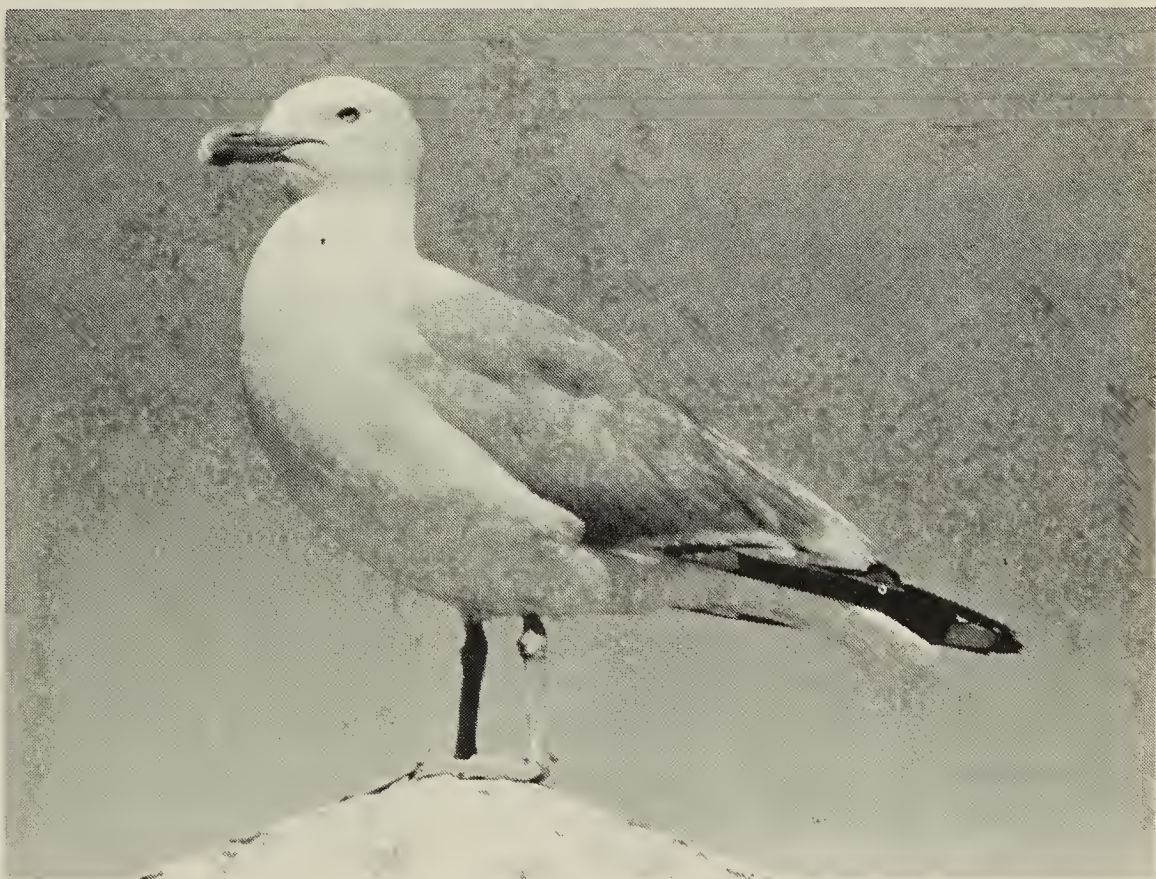
¹⁰MOYNIHAN, M. 1956. *California Gulls and Herring Gulls breeding in the same colony*. Auk 73: 453-454.

¹¹STEWART, R. E. 1971. *Check list of birds in North Dakota*. Prairie Nat. 3: 3-12.

¹²TAVERNER, P. A. 1919-1920. *The birds of Shoal Lake, Manitoba*. Ottawa Nat. 32: 137-144, 157-164; Can. Field-Nat. 33: 12-20.

¹³VERMEER, K. 1970. *Breeding records of Herring Gulls in Alberta and California Gulls in Manitoba*. Can. Field-Nat. 84:182.

¹⁴VERMEER, K. 1970. *Large colonies of Caspian Terns on Lakes Winnipeg and Winnipegosis, 1970*. Blue Jay 28: 117-118.



Herring Gull
Robert J. Long



Whooping Cranes at Lucky Lake, Saskatchewan, October, 1973

Gary W. Seib

INDIAN BIRD IDENTIFICATION AND WHOOPING CRANES AT RED EARTH, SASKATCHEWAN

by DAVID MYER, SILAS HEAD, and DONALD McKAY

In the early winter of 1970-71, I began studies of the ethnography and history of the Red Earth Indian Reserves in east central Saskatchewan (see map). The scope of these studies included the gathering of information on the classification of birds, mammals and reptiles by the Red Earth Cree. During the summer of 1972, I continued my research at Red Earth and collected relatively complete information on the terms used by the Red Earth people for various species of birds. Also, some of the extensive Cree knowledge of avian behaviour was recorded.

To accomplish the identification of bird species in the Cree language, three men were questioned with the aid of illustrated texts in ornithology. The three men who made the species identifications were Silas Head, Donald McKay and George Head, aged 68, 61 and 61, respectively. The wives of these men also took an active part in the identification sessions, with the result that the final list of Cree terms for bird species was based on the efforts and knowledge of six persons. Donald McKay and his wife, Matilda, identified 104 species, George Head and his wife, Alice Amelia, knew 96

species, and Silas Head and his wife, Mary Jane, 83 species. In some cases rare species were recognized but as these species had not been seen or spoken of for many years, their names were not recalled.

Altogether the three couples gave separate Cree names to 122 bird species that they recognized. For the most part, the identified species had been seen often and were regarded as common or regular inhabitants of the area. The total number of species thus identified compares favourably with the number of species found to nest in the general Nipawin area.^{2 4}

The late Maurice Street found nests of 131 species within a 20-mile radius of Nipawin, and recorded flightless young for 10 more species, bringing his breeding species to a remarkable total of 141.²

It should also be stated that these ornithologists, as a result of decades of careful observation, have recorded 241 species of birds in the Nipawin area. Many of these are only occasional visitors to this part of the prairie provinces.

In the course of the collection of this information on birds, some data on Whooping Cranes also was obtained, mainly from Silas Head and Donald McKay. Since their accounts may be of interest, they are presented here.

Whooping Cranes in the Red Earth Region (by Silas Head)

A long time ago there were a few Whooping Cranes around here. One of the Indians from up north, whom I met, said there were a lot of Whooping Cranes up there. In Cree the Whooping Cranes are called 'waapichichaak' (white cranes). The Sandhill Cranes, "ochichaak", are also found here. They nest on the other side of Mountain Cabin. Their nests are very poor, made of little sticks. They lay three eggs in them.

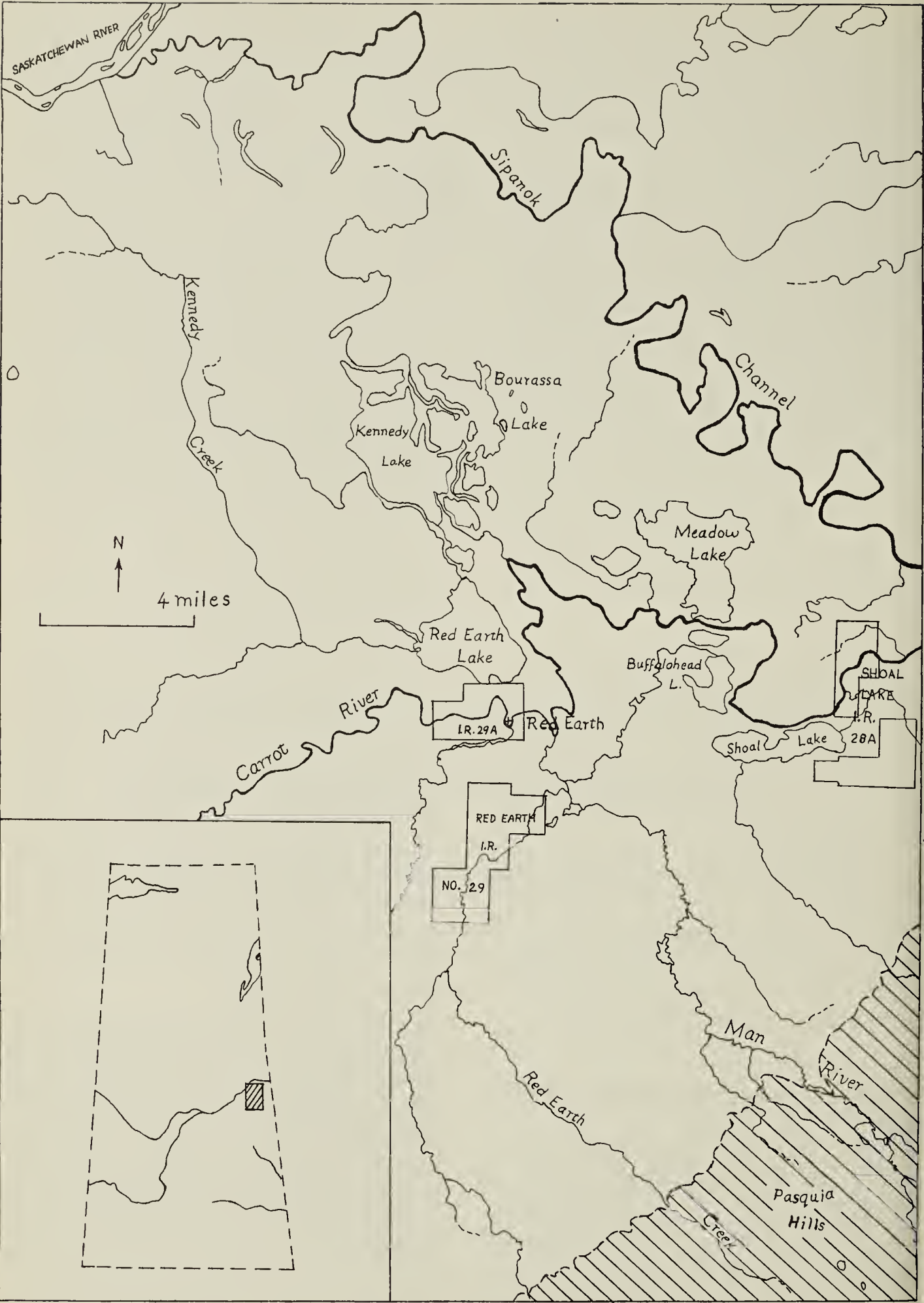
My grandfather saw Whooping Cranes here a long time ago in the spring. They were walking in the water on the edge of the marsh between here and the south reserve, to this side of where Andrew's house is now (on the north side of the reserve). That was before the willows grew up there. My grandfather, Okimawipimotew, tried to kill them but he couldn't do it. He got very close but they flew before he shot. Miikwanaakeskam said he saw lots of white cranes out on the prairies before the white men came.

When I was a young man there were a few Whooping Cranes around Kennedy Creek to the north of here. We saw them just about every summer. One time, long ago, I was with a hunting party that was after moose on Kennedy Creek. One of the old men, Samuel Nawakayas, knew that we were there and he left Red Earth to come and join us. On his way he noticed some Whooping Cranes, two of them, and he went over to have a closer look. He tried to hunt the cranes but he was not able to shoot either of them. While he was there he found their nest. It was not a very good nest, just a few sticks on the ground in the swamp. He found three eggs in the nest and he took them to be eaten. When he found us at Kennedy Creek, he told us about the cranes and the eggs.

In the 1930's there was a big forest fire which burned throughout the whole territory to the north of Red Earth. It came from the west, from the farming settlement, and it burned across Kennedy Creek and as far east as the Sipanok Channel. After the fire we didn't see the Whooping Cranes anymore.

Hunting Whooping Cranes in the old days (by Donald McKay)

I have never seen a Whooping Crane myself. They are called "waapichichaak". My grandfather, Miik-



Map showing locations of Red Earth Indian Reserves, Saskatchewan.



Gary W. Seib

Whooping Crane at Lucky Lake, October, 1973.

wanaakeskam, used to talk about them a long time ago. He saw them to the west, out on the prairies in the spring. A long time ago it was very easy to shoot them in the spring. All you had to do was to wave something white, maybe a piece of cloth, and the crane would come to see what it was right away. As it came towards you, you had to remain hidden and if the crane saw no one it would come very close. Then you could shoot it.

Comments

It is apparent from these narratives by Silas Head and Donald McKay that Whooping Cranes were well known to those Plains Cree who moved from the prairies to Red Earth in the 1860's. These birds, although not common, were observed often enough that their behaviour was well known and, as a result, an effective hunting technique had been developed.¹ It is noteworthy that older men (such as Miik-wanaakeskam) have passed on their knowledge of a Whooping Crane hunting technique to the generations of hunters who were born and grew up at Red Earth. Strangely, though, this

knowledge was not used by the younger hunters when they encountered occasional white cranes in the Red Earth region.

In this connection, Fred Lahrman has written me as follows:

I think that the success of the Cree's method of hunting the Whooping Cranes in the spring by waving a white cloth is easily explained when you stop to consider that Whooping Cranes are very territorial in behaviour, especially in their breeding grounds. The Cranes, on seeing something white moving about, would no doubt suspect that it was another Crane intruding on their territory and would move in to drive out the intruder. It would seem that this method of hunting would be most successful on the Whooping Crane's breeding grounds. (See also Lahrman 1972:150).

Silas Head's account indicates that Whooping Cranes may have nested to the north of Red Earth into the early decades of this century. His statement that three eggs were found in the Whooping Crane's nest was in answer to my direct query on this matter. Since he was recalling an incident which occurred perhaps 40 to 50 years ago, he may have been mistaken. Normally Whooping Cranes lay two eggs, but there are exceptions. Occasionally they lay only one egg and sometimes three.¹ Fred Lahrman (personal communication) indicated that the nest discovered by Fred Bradshaw of the Saskatchewan Museum of Natural History on May 28, 1922, at Muddy Lake near Kerrobert, Saskatchewan, contained 3 eggs.

¹BENT, A. C. 1926. *Life Histories of North American Marsh Birds*. Bulletin 135, United States Nat. Mus. pp. 219-231.

²HOUSTON, C. S. and M. G. STREET. 1959. *The Birds of the Saskatchewan River, Carlton to Cumberland*. Special Publication No. 2, Saskatchewan Nat. Hist. Soc., Regina.

³LAHRMAN, F. 1972. *The Whooping Crane in Saskatchewan*. Blue Jay, Vol. 30, No. 3, pp. 146-150.

⁴SHADICK, S. 1971. *Birds of the Wildcat Hill Wilderness Area*. Blue Jay, Vol. 29, No. 3, p. 130.

BIRDS NEAR FORT GOOD HOPE, NORTHWEST TERRITORIES.

by HARALD B. BROCH*

(EDITOR'S NOTE: The author compiled the following list of 47 species during a 15-month period at Fort Good Hope, May 1972, to August 1973. His thesis studies were mainly directed towards cultural and human ecology. He does not pretend that the list is comprehensive and has not reviewed the literature. Fort Good Hope is on the Mackenzie River about 250 miles south of the Arctic Coast.)

EXPLANATION OF SYMBOLS

- ? = uncertain characteristics
o = more than 5 observations
x = more than 50 observations
- = less than 5 observations
t = observed migrating
y = young
+ = also commonly seen at other places than those specified by date
H = breeding
F.G.H. = Fort Good Hope

ARCTIC LOON. This species was commonly seen both on the Mackenzie River and on small lakes in this area.

- 11/6/72 Fossil Lake
- 30/6/72 Mackenzie River
by Loon River

HORNED GREBE.

- + - 6/8/72 South of San Sault,
Mackenzie River
-H 31/5/72 On small lake by
Ontaritie River

WHISTLING SWAN. Was observed most frequently during spring migration, 1973. The migration seemed to reach its peak in the second week of May. For about 5 days the birds were flying steadily north in the

morning and most of the day, while great numbers returned on a south-bound flight early at night. The same migration pattern could be observed for Canada Goose, White-fronted Goose and Snow Goose.

- + o 30/6/72 Mackenzie River just
north of F.G.H.
xt May/73 Maekenzie River
by the mouth of
Ontaritie River

CANADA GOOSE. This species was often noticed migrating with White-fronted Geese. At the mouth of Ontaritie River we noticed Canada Geese flying in pairs as early as the middle of May; sometimes they were observed towards the end of this month grazing side by side on green pastures. On August 5, 1972, about 60 Canada Geese were observed molting, 10-15 miles north of San Sault Rapids. In the upper area of Ramparts River about 30 geese were observed feeding on the low green riverbanks. My companions informed me that geese were often seen here and they remembered noticing them at this place also when the birds were molting.

- + x 5/8/72 Islands north of
San Sault Rapids
xt May/73 Mackenzie River by the
mouth of Ontaritie
River
-H June/73 Mackenzie River, just
north of Ontaritie River
oH 8/6/73 Upper Ramparts River

WHITE-FRONTED GOOSE.

- xt June/73 Maekenzie River by the
mouth of Ontaritie
River

SNOW GOOSE.

- xt June/73 Mackenzie River by the
mouth of Ontaritie
River
ot 18/9/72 F.G.H.

*Department of Social Anthropology,
University of Bergen,
N-5000 Bergen, Norway.

MALLARD. This duck is to be seen almost everywhere.

- + o 16/6/72 F.G.H.
- H 23/6/72 Hare Indian River
- o 9/9/72 Hare Indian River and Loche Lake
- 6/5/73 Ontaritue River
- x 7/5/73 Ontaritue River

PINTAIL. During May, 1973, this duck was among the first to arrive at Ontaritue River and totally dominated the first days. The first duck was seen on May 6: a Mallard. The next night the air was filled with ducks, mainly Pintails. At night the ducks were constantly in the air, as the waterholes still froze early in the morning.

- + o 30/6/72 Maekenzie River by F.G.H.
- o 9/9/72 Hare Indian River and Loche Lake
- x 6/5/73 Ontaritue River

GREEN-WINGED TEAL.

- + o 18/5/72 Hare Indian River
- 11/6/72 Fossil Lake
- o 30/8/72 Hare Indian River
- 8/9/72 Loche Lake
- o 28/5/73 Small lakes close to Ontaritue River

AMERICAN WIGEON. As the duck spring migration wore off in the Ontaritue River area in the spring of 1973, wigeons remained and were soon the most common duck to be seen. Late in July I visited some small lakes close to this river and on several of them 20-40 young ducks of this species were swimming. When disturbed they ran ashore.

- + - 5/8/72 Mackenzie River south of F.G.H.
- xH 30/5/73 On Ontaritue River
- xy 27/7/73 Ontaritue River

NORTHERN SHOVELER. This species seemed to arrive somewhat later than most other ducks in the spring of 1973 in the Ontaritue River area. The only place they were observed in any significant number was on a mud/sand bar on the Mackenzie a few miles north of the mouth of Ontaritue River. On small remote lakes in the upper parts of this river shovelers

probably breed.

- oH 26/5/73 Maekenzie River and Ontaritue River on small lakes nearby

RING-NECKED DUCK.

- 10/6/72 Fossil Lake

CANVASBACK.

- 26/5/73 Ontaritue River

GREATER SCAUP.

- o 9/9/72 Hare Indian River and Loche Lake

LESSER SCAUP.

- + o 11/6/72 Fossil River and Lake
- o 16/6/72 Loche Lake
- o 9/9/72 Hare Indian River and Loche Lake
- 28/5/73 Small lakes close to Ontaritue River

COMMON GOLDENEYE. In late May, 1973, some 10 pairs of this species were observed on some small lakes a little north of Ontaritue River. These lakes were surrounded by dense old woods.

- 8/6/72 Hare Indian River
- o June/73 Small lakes close to Ontaritue River

BUFFLEHEAD.

- o 1/6/73 Small lake close to Ontaritue River

OLDSQUAW. At Loche Lake two pairs of this species were observed on June 16, 1972. Late May flocks were flying continually low over the Mackenzie, northbound.

- xt 30/5/73 Maekenzie River by the mouth of Ontaritue River

WHITE-WINGED SCOTER. Males of this species were observed migrating southwards on June 28, 1973. Native theory has it that all "black duck" males go south before the young and the females.



Map of the Fort Good Hope area.

- o 16/6/72 Loche Lake
- ot 26/9/72 Maekenzie River close to F.G.H
- ot 5/10/72 Maekenzie River close to F.G.H.
- ot 28/7/73 Maekenzie River close to Little Chicago

SURF SCOTER. This species is by far the most common scoter in the Fort Good Hope area. Both the Surf Scoter, the White-winged Scoter and the Black (Common) Scoter are called "black ducks" by the natives of this area. These are the most popular ducks because of their orange fat and large size. Surf Scoters seem to be breeding at Loche Lake.

- + o 11/6/72 Fossil Lake
- x 16/6/72 Hare Indian River and Loche Lake
- xy 9/9/72 Hare Indian River and Loche Lake
- xt 25/29/9/72 Maekenzie River, F.G.H.
- o 21/5/73 Small lakes close to Ontaritue River

BLACK (COMMON) SCOTER.

- o 16/6/72 Loche Lake
- ot 26/9/72 Maekenzie River F.G.H.

RED-BREASTED MERGANSER.

- + - 23/6/73 Hare Indian River
- y 19/8/73 Hare Indian River

GOLDEN EAGLE. A big eagle was observed high in the sky on May 29, 1973. My companions said it was a Golden Eagle and I came to the same conclusion as I could find no sign of white on the bird.

SPRUCE GROUSE. Common around Fort Good Hope; most frequently observed late fall and early winter. I did not see any birds of this species in the late winter of 1973.

- + o 26/9/72 F.G.H.
- o 20/10/72 F.G.H.

9/12/73 30 miles north of
F.G.H.

SHARP-TAILED GROUSE. Commonly seen in late winter at Fort Good Hope. Sharp-tailed Grouse were not observed in late fall, 1972. The natives claim that this species is more shy than the Spruce Grouse. They are both called chickens; this term does not include ptarmigans.

+ o 7/11/72 F.G.H.
- 8/2/73 F.G.H.
- 2/4/73 F.G.H.
o 12/4/73 10± miles south of
F.G.H.

WILLOW PTARMIGAN. This species was commonly seen at Fort Good Hope after snowfall. I observed that some ptarmigans I shot before Christmas, 1972, were pink. This was particularly conspicuous when the birds were lying in the snow. The game warden in the settlement told me that he had seen pink ptarmigans the previous year. The pink colour, however, disappeared as winter wore on. Ptarmigans observed in January, 1973, and the rest of the winter were all pure white.

+ o 10/10/72 F.G.H.
o 21/11/72 F.G.H.
o 6/12/72 South of F.G.H.
x 8/2/73 F.G.H.
o 20/2/73 F.G.H.
o 2/4/73 F.G.H.

ROCK PTARMIGAN. This species was only observed once, but is probably more common than my observations indicate. The Indians of Fort Good Hope classify both Rock and Willow Ptarmigan as "ptarmigan", making no distinction between the two.

o 2/4/73 F.G.H

SANDHILL CRANE. The Sandhill Crane seems to be abundant in the upper Ontaritue area. When walking in the bush from May 21 through 24, 1973, I frequently saw and heard these birds.

ot 24/5/72 F.G.H
o 5/8/72 Mackenzie River south
of F.G.H.
oH 24/5/73 Upper Ontaritue River

COMMON SNIPE.

June/72 F.G.H

SPOTTED SANDPIPER.

+ oH May/73 Ontaritue River area

LESSER YELLOWLEGS.

+ o? May/73 Ontaritue River area

ARCTIC TERN.

17/6/72 Loche Lake

HAWK OWL. The first time I came across this bird I was out hunting ptarmigan and had just shot one. Suddenly an owl swept down from nowhere and grabbed my dead ptarmigan. Hawk Owls were often observed sitting in black-spruce tops.

+ - 19/3/73 F.G.H.

GREAT GRAY OWL.

- Nov./72 F.G.H.

BELTED KINGFISHER. This bird probably breeds at Jackfish Creek by F.G.H., Ontaritue River, and Loche Lake River, as they could be observed all summer 1972-73.

- 19/6/72 Hare Indian River
- 19/6/72 Loche Lake River
- 20/5/72 F.G.H., Jackfish Creek
- June/72 Ontaritue River
- 18/5/73 Ontaritue River

YELLOW-SHAFTER FLICKER. This bird was observed only once — Snafu Creek about 20 miles south of Fort Good Hope on November 3, 1972, in a forest destroyed by fire.

NORTHERN THREE-TOED WOODPECKER.

- 6/12/72 F.G.H.

GRAY JAY. This species is abundant in the Fort Good Hope area. In late fall and winter it is often a nuisance to marten trappers because it eats the bait

from the traps and quite often gets trapped.

+ - 22/11/72 Common around F.G.H.

COMMON RAVEN.

+ - 1/1/73 Resident at F.G.H.

BOREAL CHICKADEE.

- 12/10/72 F.G.H.

AMERICAN ROBIN.

+ oH 6/7/72 F.G.H.

YELLOW WARBLER

- 3/7/72 F.G.H.

PINE GROSBEAK.

o 12/4/73 F.G.H.

COMMON REDPOLL

+ - 19/10/72 F.G.H.

WHITE-WINGED CROSSBILL

o 6/2/73 F.G.H.

WHITE-CROWNED SPARROW.

+ oH 5/5/72 F.G.H.

SNOW BUNTING. This species was only observed once, on September 28, 1972, when a large flock stayed in the settlement of Fort Good Hope for 3 or 4 days.

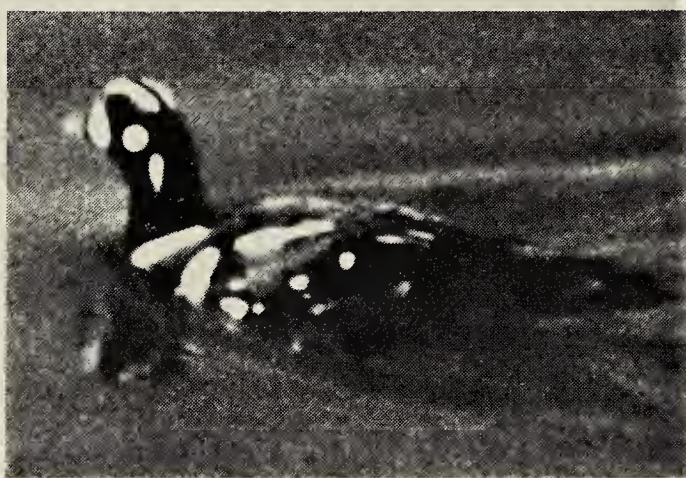
HARLEQUIN DUCK AT SASKATOON

by WAYNE HARRIS*

On June 22, 1973, at about 12:30 p.m., E. A. Driver and I were watching Common Suckers trying to jump the

weir on the South Saskatchewan River adjacent to the university campus in Saskatoon when a male Harlequin Duck swam out from the bank just above the dam. As neither of us had binoculars, I returned to the office for a pair plus a camera.

Upon my return the duck was feeding about 30 yards from shore. While I tried to get close enough to take some photographs Ed and two others who had returned with me, Vic Lieffers and Don Peden, watched the bird. I approached within 30 yards and took several photographs of the duck between his dives.



Harlequin Duck

Wayne Harris

The Harlequin was in full breeding plumage with an unmistakable black and white pattern on the head and neck, rusty flank and white line above the wing. The bird was surprisingly tame, paying no attention to the nearby activity on shore, and fed continuously during 45 minutes of observation. His dives were well timed: he dove about 30 feet upstream from the edge of the weir, surfacing 3 feet from the lip of the weir, seeming certain to go over, only to swim back upstream and dive again.

The Harlequin remained for 5 days during which time he was observed by several members of the Saskatoon Natural History Society. The duck was last observed on the evening of June 26 at which time he was resting on the river well out from shore.

This sighting is the first for the Saskatoon area and the sixth for Saskatchewan. The previous records

*Box 93,
Raymore, Saskatchewan.
S0A 3J0

are: an adult male collected from a flock of several pairs at Saskatchewan Landing, May 31, 1934⁴; a male on the Puskwakau River (54°34'N and 103°34'W), July 13 and 14, 1966⁵; three adult males in eclipse plumage at Regina, September 6, 1968²; one of undetermined sex or age at Condie, October 10, 1968² and an adult male south of Regina, June 5, 1971¹.

The normal range of this species in Canada is the Yukon and British Columbia where it frequents fast mountain streams in the breeding season and the open sea in winter. The Harlequin is also found in eastern Canada from the southern tip of Baffin Island and southeast along the coast of Quebec and Labrador.³ In the United States the closest breeding range is western Montana where it breeds sparingly in the Rocky Mountains.^{6,7} It is regarded as a rare migrant inland throughout the continent.

I wish to thank J. B. Gollop for assistance in obtaining information for this note and Edward Driver and Jim Wedgwood for reading the manuscript.

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WILSON'S PHALAROPE IN BREEDING PLUMAGE NEAR FORT SMITH, N.W.T.

by ERNIE KUYT*

On June 3, 1973, my family and I visited a slough near the northeast corner of Alberta (59°52'N, 111°42'W), about 10 miles south of the N.W.T.-Alberta border. The slough is one of our favourite spring birding areas and on this day my wife and I saw at least eight species of ducks, some shorebirds, gulls and other, smaller birds. Of the shorebirds, the most interesting species seen was Wilson's Phalarope. A male and female in breeding plumage were flushed from a small, cattail-ringed pond. The two birds landed on the shore of the main slough and were watched for about 10 minutes through 7 x 50 binoculars.

On June 8 I returned to re-locate the birds and to try to find their nest, however, only the female was found. Photographs taken at the time were later examined by W. Earl Godfrey who verified my identification.

Godfrey reports the Wilson's Phalarope nesting in Alberta as far north as Bear Lake in the Grande Prairie region and occurring in summer without evidence of breeding near Lake Athabasca.¹ Nero provided the first Saskatchewan breeding record of the Northern Phalarope (south of Lake Athabasca) but he did not list the Wilson's Phalarope among birds observed in the same area.² Richard King, surgeon and naturalist with Back's expedition to the mouth of the Great Fish River (now Back River), claims to have collected Wilson's Phalarope near Artillery Lake but that seems too far to the northeast for this common prairie bird.³

Our sighting of Wilson's Phalarope near Fort Smith constitutes an 85-mile northward extension of its known

*Canadian Wildlife Service,
Box 508,
Fort Smith, N.W.T.,
X0E 0P0

**Saskatchewan
Natural History Society
Twenty-sixth Annual Meeting
For details see page 192.**



Wilson's Phalarope

Doug Gilroy

range and suggests the possibility of their having nested.

¹GODFREY, W. E. 1966. *The birds of Canada*. Bull. 203. Biol. Ser. 73. Nat. Mus. of Can. 428 p.

²NERO, R. W. 1963. *Birds of the Lake Athabasca region, Saskatchewan*. Sask. Nat. Hist. Soc. Regina, Sask. Spec. Pub. 5. 143 p.

³PREBLE, E. A. 1908. *A biological investigation of the Athabasca-Mackenzie region*. U.S. Dept. Agric. N. Am. Fauna Ser. 27. 574 p.

GREAT GRAY OWL IMPALED ON BARBED WIRE

by R. W. NERO*

The seriousness with which ornithologists view mortality factors and the scarcity of records of keen-sighted owls becoming caught on barbed wire is indicated by two separate accounts published in the December, 1973, *Wilson Bulletin*. In these two cases, adult Great Horned Owls were involved and both were alive when found. One was impaled on four barbs in its eye; though part of the fence wire

was cut out and the embedded portion was removed by a veterinarian, the bird died two days later. This was in Missouri. In the second incident, observed in Pennsylvania, an owl had become impaled by the skin at the base of one wing; the wing bone was broken and the wing was almost severed.

The following report of entrapment of a Great Gray Owl is likely the first of its kind. This species is known to suffer unusually high mortality when it occasionally ventures into settled regions. Great Gray Owls appeared in exceptionally high numbers over a large area of Manitoba in the winter of 1973/74 and both road kills and gunning kills have been reported.

In early March, 1974, Conservation Officer Robert J. Buck, Pine Falls (about 50 miles northeast of Winnipeg), reported that a local resident had released a live Great Gray Owl from a barbed wire fence. When contacted the following day he visited the site, tracked the wounded bird across the snow for a half mile, captured it and eventually sent it to Winnipeg. Though efforts were made by Chris Ridley, Birdwarren Sanctuary, to repair the superficial damage to its wing, the bird died. The owl, an adult female, according to Spencer G. Sealy is now a scientific study specimen in the collection of the Zoology Museum, University of Manitoba.

Because of the unusual nature of this incident, I wrote to Mrs. Elsie Carlson, who had found and rescued the owl, and she kindly supplied the following details of the event which happened on February 26, 1974.

"I was looking from my kitchen window in our mobile home which is nestled in a bluff of trembling aspen (poplar) and birch, just off P.T.H. No. 11 highway. I noticed a black object near a fence. The background was all deep snow and the black object aroused my curiosity. My husband and I then both observed the black object with a pair of binoculars. The object suddenly took the shape of a large bird and it seemed to be struggling. It was much too large to be a raven so I decided to investigate further.

*546 Coventry Road,
Winnipeg, Manitoba.

LONGEVITY RECORD FOR BLACK-CROWNED NIGHT HERON: 16-1/2 YEARS

by C. STUART HOUSTON*

On July 7, 1956, I banded 21 nestling Black-crowned Night Herons in a small colony located by nature columnist Doug Gilroy, along the banks of the Qu'Appelle River, 6 miles east of Craven, Saskatchewan (50°40'N - 104°30'W).

On February 15, 1973, one of these herons, bearing band No. 547-24244, was found sitting on a fence, apparently unable to fly, near the Cape Romain National Wildlife Refuge, Awendaw, South Carolina (32°40'N - 79°50'W). It was brought by a neighborhood youngster to Burkett S. Neely Jr., the refuge manager, but died during the night.

This bird reached an age of 16 years, 7 months and 8 days. The band itself was in excellent condition and remains on the heron, which has been mounted for public display at the refuge. The oldest heron of this species that I have located in the literature is one that reached 14 years, 10 months, listed by Rydzewski in *The Ring* 34: 178, 1963.

This was, however, a short-lived record. Less than 5 months later, on July 9, 1973, a Black-crowned Night Heron banded as a nestling in Ohio near the southwest corner of Lake Erie, was collected for pesticide analysis within 30 miles of its banding place. It had been banded on June 6, 1952, and was slightly more than 21 years old. I am indebted to Jay M. Sheppard of the U.S. Bird Banding Laboratory for forwarding this record and to Laurel F. Van Camp, naturalist at the Crane Creek Wildlife Experiment Station for permission to publish this record.

*863 University Drive.
Saskatoon, Sask. S7N 0J8.

"I strapped on my snowshoes and with a rabbit snare and stick to hold this big bird away I went to help him. When I got to him I was afraid that he might decide to bite me. I snared his head but while I was busy doing this he got me by the hand with the claws from both feet. My woolen gloves were no protection I can assure you. My next thought was, what do I do now in this predicament? With my free hand I took the stick and put it next to his feet. He removed his claws from my hand (which really hurt and was bleeding) and sank his claws into the stick instead. Then, with my hand that was not wounded I grabbed both his feet above the claws, and held him upside down while I attempted to free his wing from the barbed wire.

("The barbed wire strand was about three feet from the ground but was hanging loose about 18 inches above the snow. The owl may have tried to land on the wire and caught his wing in the process. I first noticed the owl about noon hour on a calm day with temperature about 30 above).

"At this stage of the game it would be safe to say that my heart was beating about as fast as it could. I didn't want to injure the owl anymore than he was, but it was necessary to pull his wing free of the wire. Finally, I did free him and then turned him away from me, and he fluttered away about 10 feet. He then turned around and looked at me. I turned around and walked home to nurse my hand.

"I got in touch with the local conservation officer who captured the owl the following day. I learned from the officer that the owl had followed me most of the way home. Neighbors tell me that the owl had been in this area for the past two weeks and had no fear of buildings, houses, etc. Knowing of this owl's fate now, I wish I had been of more assistance to him.

"I would appreciate your writing a note for publication in your local natural history bulletin. You may wish to note that my rescue of the Great Gray Owl was an ordeal for both of us, for I am 70 years of age."

SOME GYRFALCON SIGHTINGS IN SASKATCHEWAN.

by FRED W. LAHRMAN*

On November 25, 1973, I had a splendid view of a black phase Gyrfalcon at the Wascana Waterfowl park area.

I immediately reported the sighting to other Regina birders. Gary Seib, Dr. and Mrs. Jim Jowsey and Frank Brazier located it on Wascana Lake feeding on a small duck on the ice near a patch of open water. It flew to Spruce Island nearby carrying the duck with it and was not seen again. On the same date Bob Turner saw a white phase Gyrfalcon flying over the town of Ogema.

On December 9, R. J. Long sighted a dark Gyr near Valeport.

A more recent sighting was reported by Sue Rockwood, who saw a white phase Gyr on April 13, 1974, flying west over Regina city.

Ronald and Donald Hooper in "A Preliminary List of the Birds of the Somme District, Sask. April 1954" reported the following Gyrfalcon observations:

"Regular but uncommon in early winter. Most common from Oct. 18 to mid-December, 1951 when several birds of the white colour phases were seen."

On recent inquiry Ron reported that the white phase Gyr were seen only in 1951 but the black phase falcons were seen in the early part of the winter of 1951-1952 and 1953 but have not been seen since.

*Museum of Natural History,
Regina, Sask.

THOUGHTS OF A BACKWARD FLYING DUCK LANDING AT A BIOLOGIST'S STUDY AREA

by BEV CHIPPING*

I can tell by the sound
At the local duck pound
That they've put out the grain once
again.

It amazes me still
That they get such a thrill
From watching this plain little hen.

They think I'm quite odd
When I land on their sod
With my tail ahead of my beak.
And they scurry to hide,
I note with great pride,
To catch a wee little peek.

They'd bust if they knew
How I tried and construed
To develop my different approach.
There is none to compare
As I land from the air
Like a footman just leaving his coach

I got tired, you see,
Of the same drudgery
Of being like orthodox ducks
So I thought I would try
Some new ways to fly
And develop some interesting clucks.

I can tell by their look
And that net on that hook
That they'll try to catch little old me.
So I'll take a low bow
And quickly leave now
Or I'll end up one more researchee.

Too bad they can't see
That if they catch me
They'll destroy my developing tail.
I'm one of a kind
So, if you don't mind,
I'll go find a compatible male.

*Apartment 123, Brierwynd Court,
176th Street and 81st Avenue,
Edmonton, Alberta.
K0E 1R0

* * * * *

2,199 fish eggs were found in an adult male mallard, May 17, 1974 Wintago Lake, Churchill River system. Suckers and walleye were spawning at the time.

Dale Hjertaas and John Poulson

WINTER BIRD FEEDING AT TOGO, SASKATCHEWAN

by W. J. C. MAY*

Our winter bird feeding program started small but is becoming very popular with birds and humans alike. The original feeder was Walter Krupp, in the village of Togo, and he is still the main bird feeder and watcher. He was joined by the late Charles Stone on his farm and now we have about a dozen farmers with well established feeding stations.

Obtaining sunflower seeds is becoming increasingly difficult and expensive. Now retired, I have fallen heir to the task of locating, hauling and distributing seeds. In 1973 I made two 400-mile round trips to Glenboro, Manitoba, and hauled over 4000

pounds of sunflower seeds. These we bagged in 50-pound bags. We also put out rapeseed for the redpolls, especially.

In February, 1974, the following birds were counted at my feeder located on our farm 4 miles north of Togo: Hairy Woodpecker, 2; Downy Woodpecker, 2; Blue Jay, 2; Black-capped Chickadee, 8; Evening Grosbeak, 70+; Pine Grosbeak, 22; Common Redpoll, 45; Hoary Redpoll, 5 and, our biggest thrill, Gray-crowned Rosy Finch, that rare straggler from the mountains, 2. On March 2, the first two Tree Sparrows arrived but by March 11, the Pine Grosbeak numbers had dropped to two. However, a new invasion of 200 Evening Grosbeaks appeared on March 21.

*Togo, Sask.



NEW NATURE TRAIL — YORKTON, SASKATCHEWAN

The Annual Family Day at the York Lake Regional Park on Sunday, August 1, 1974, marked the opening of the new Nature Trail laid out by the Yorkton Natural History Society. It extends for one mile through a variety of habitat, including margins of lake and marsh. Fourteen lectern-like posts contain detailed descriptions, under plastic, of the plants and birds to be expected at each station, and how they relate to the environment. The trail is named the Isabel M. Priestly Trail, in honour of the founder of the *Blue Jay* and the Yorkton Natural History Society.

Shown at the entrance to the trail are, from left to right, Lorne Lepp and Larry Morgotch of the Yorkton Natural History Society, G. C. Rathwell, supervisor of Saskatchewan Regional Parks, and Dr. C. J. Houston, chairman of the York Lake Regional Park authority.



Red Fox nursing
young



Photos by
LORNE SCOTT

Young Red Fox.

Blue Ja



The Chaplin Lake processing plant and sodium sulphate stockpiles.

ALKALINE LAKES IN SOUTHERN SASKATCHEWAN AND THE SODIUM SULPHATE INDUSTRY

by PAUL L. BROUGHTON*

Extensive deposits of naturally occurring sodium sulphate exist in the widespread alkaline lakes of southern Saskatchewan. The sulphates form permanent or intermittent crystal beds on mud flats along the margins of the lakes and are concentrated in the covering brines. The hot, dry summer months have evaporated most of the water from these closed basins and, over thousands of years, millions of tons of salts have accumulated.

The salts in several of these lakes are commercially harvested for sodium sulphate. It ranks second only to potash in Saskatchewan's industrial mineral enterprises. Large quantities of the recovered sodium sulphate are used in the manufacture of kraft paper, the familiar brown paper of cardboard and paper bags.

Sodium sulphate associated with southern Saskatchewan alkaline lakes occurs naturally as mirabilite ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$) or Glauber's salt, which deposits from saturated brines or goes

*101 East Dewdney Ave.,
Regina, Sask.



The Chaplin Lake alkaline flats from which the brine is removed. Note the remains of an old wooden bridge in the foreground. Wood does not decay very easily in such a harsh environment.

back into solution depending upon climatic conditions. When kiln dried, hydrous sodium sulphate is converted to the mineral, thenardite (Na_2SO_4), a white, dry, free flowing crystalline material with the general appearance of fine table salt.

Many lakes have a more or less permanent salt bed, varying in composition and thickness, and usually covered by a thin layer of mud. Contaminants by other salts are usually magnesium sulphate, sodium chloride and calcium sulphate, which may have been present in the original brine. A permanent bed may or may not be present in a commercial deposit lake.

There are 10 lakes in southern Saskatchewan, each with calculated reserves of over two million tons of anhydrous sodium sulphate: Alsask Lake, Big Quill Lake, Chaplin Lake, Frederick Lake, Horseshoe Lake, Ingebright Lake, East Coteau, Muskiki

Lake, East Sybouts Lake, and White shore Lake. Five of the lakes are currently in commercial production, some, like at Chaplin, on a year round basis. The most satisfactory method of commercial production is recovery from the brine, rather than actual mining of an existing permanent salt bed. This permits greater control over impurities, particularly clay, mud and unwanted salts.

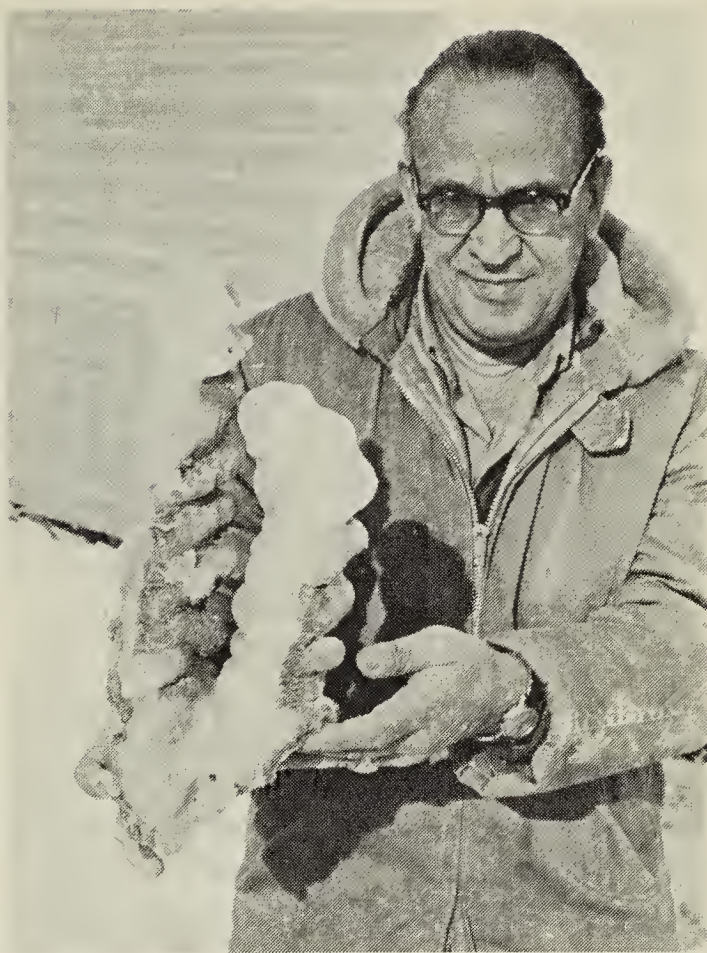
If you have an interest in mineral recovery from alkaline lakes, your visit would be welcomed at many of the commercial plants. Most visitors tend to stop at the Saskatchewan Minerals Corporation plant at Chaplin Lake. Undoubtedly, one of the most accessible of the alkaline lake operations, it is located 100 miles west of Regina on the Trans-Canada Highway. Driving on the Trans-Canada through the small town of Chaplin, one can readily see the stockpiled mound of sodium sulphate.

Commercial production from the Chaplin Lake deposit started in 1947, though the existence of this and other deposits were known earlier in the century. During the first World War, efforts expanded to find a new supply for the halted German potash imports. An erroneous report of potash in the southern Saskatchewan lakes led to a 1918 claim-staking rush. Failure to find this potassium mineral, however, resulted in the lapse of the claims and most interest in the area. Nevertheless, the lakes were found to contain large quantities of Epsom and Glauber's salts, the hydrated forms of magnesium and sodium sulphates. A geological survey in 1944 indicated that Lake Chaplin would indeed support a viable commercial sulphate production. The growing demand for this salt in the manufacture of kraft brown paper at this time provided the needed incentive to transform this wasteland.

Chaplin Lake is roughly 18 square miles with a brine depth of approximately 2 feet.

The Chaplin plant uses the brine pumping methods for recovery of the salts, rather than direct mining of the salt bed. The brine from the lake is diverted by ditches and pumping stations into small but deep storage reservoirs. Saskatchewan's arid summer is conducive to the formation of high density brines, particularly when the temperatures approach the 90-100 degree range. In the fall, freezing weather causes the sodium sulphate crystals to precipitate from the super-saturated brines without the formation of an ice layer over the reservoir. Periodic removal of the weak brine solution and its subsequent return to the lake leaves most of the available salt precipitated on the floor of the evaporating basin. In the winter months tractor-pulled scrapers stockpile the sodium sulphate near the processing plant.

The brine pumping method reduces



A prize specimen of sodium sulphate taken from the plant.

the chemical impurities to a minimum. In the brines where carbonates, chlorides and magnesium sulphates are formed, the sodium sulphate is one of the first salts to precipitate out in cold weather. Careful control over the brine chemistry at this point permits most of the unwanted salts to be carried away in the dilute brine and returned to the lake.

From the stockpiles, the raw salt, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$, is transported by conveyor belt to the processing plant. The Glauber's salt is fed into one of several Holland evaporators. Since the crystals contain about 60 per cent water by weight, they melt almost immediately to form a semi-liquid slurry of sodium sulphate crystals in a 35 per cent sodium sulphate solution. As the slurry passes through the gas-fired, 2000°F. evaporators, more and more of the water is evaporated, until a salt cake remains. The dry salt cake, Na_2SO_4 , contains 97.5 to 99 per cent



Stockpiling the sodium sulphate.

sodium sulphate. None of the soluble impurities have been removed as yet, though there is a ready market for salt cake of only this purity. By recycling and recrystallizing the mother liquid in the above slurry, the impurities can be quickly eliminated.

Each time I visit the Chaplin Lake plant I am fascinated by the formation of sodium sulphate stalactites and stalagmites from the ceiling, the rafters and the floor. Apparently, the water liberated to the atmosphere during the dehydration of the mirabilite condenses at various points in the building and maintains a steady drip flow. Absorbing sodium sulphate from the fine dust that coats the plant, it precipitates it as beautifully formed mirabilite stalactites and stalagmites. One notable stalagmite rises more than 5 feet from the plant floor. Smaller foot-long formations can be readily collected at numerous points about the plant. The management freely permits you to take whatever specimen you want. But, alas, their beauty is only transitory; the sulphate slowly dehydrates into an opaque white powder and the stalactites are barely able to support their own weight without crumbling.

The largest percentage of southern Saskatchewan saltcake is consumed in the kraft paper industry for the

manufacture of coarser brown papers, as in paper bags and cardboard although it is now finding widespread use in the manufacture of newsprint. An important part of the production goes to glass manufacture, where it is added to the glass melt to prevent scumming and, since it reacts with silica only at the very highest temperatures, it ensures that there will be no free silica in the melted glass. Another popular use for sodium sulphate is as an inert filler in cleansing detergents, some containing as much as 70 per cent. Other uses in the North American chemical industry include tanning leather, manufacture of blue pigments, in fertilizers, textile dyes, pharmaceuticals and non-ferrous smelting.

Canadian production of sodium sulphate is roughly 500,000 tons per year, most of which comes from southern Saskatchewan. About 400,000 tons are used domestically, with most of the balance exported to the United States. About 90 per cent of the market is for the paper industry. The southern Saskatchewan deposits have future reserves estimated between 30 and 50 million tons and perhaps, double this in presently uneconomical deposits. It should be a viable industry for many decades to come, well into the next century.

PRAIRIE LORE AND LIVING SOCIETY, SASKATCHEWAN

by NORA M. STEWART*

An organization to promote the knowledge and appreciation of the prairie outdoors, an understanding of man's impact on the environment through agricultural and other practices, and the achievement of a balance between conservation of wildlife and its habitat on the one hand and the inevitable use of the land by man on the other — these are the basic goals of the non-profit Prairie Lore and Living Society. Because I feel these aims are shared with most naturalists, I would like to explain our organization briefly, and suggest ways in which our common objectives may be achieved.

We feel that the most effective way to increase awareness of these values is through education, and have chosen to work in conjunction with the schools. Our group is developing an outdoor education center to which classes from any school (likely grades 5-12) will be able to come on a weekly basis to experience the outdoors in some of many possible pursuits. This will entail simple winterized accommodations, considerable equipment, a small resource staff to assist the teachers and an associated ranch-farm.

It is getting increasingly difficult for school boards to find mixed farms which classes can visit and this one would have a wide variety of livestock and crops. It would be set up to allow easy observation and involvement of the students, where possible. An attempt will be made to combine the ecologically safest modern farming techniques with a variety of older

methods including horse-drawn equipment and windmills.

It is difficult to appreciate the outdoors without getting out, and the mastering of various outdoor skills for all seasons will be encouraged in the hope that lifelong interests will develop. Whether by canoe, cross-country skis, snowshoes, horseback or on foot, travelling outdoors likely will result in a joy of effort and a greater awareness of the beauty and complexity of nature on the prairies. Lest anyone feel that these are frivolous pastimes for students who should be at their books, consider just a few examples of things which may be learned best outdoors: for math, survey a fence line; for history, re-enact an important historical event with costumes; or, visit an oil field, sketch a gnarled tree, measure the oxygen content of a pond, identify an animal track. The list is endless.

The proposed center should have access to a variety of habitat and the land we have chosen, for what may be only the first such center, lies on the south slopes of the Moose Mountains. It runs south for 1-1/2 miles from the aspen forest of Moose Mountain Provincial Park through slough-dotted brushland to native prairie, with 60 acres cultivated and has a commanding view of the flat prairie lands beyond. It is hard to imagine an area with richer geographical variety and potential for our endeavour. The park itself provides a wilderness for adventure-filled trips which might include sightings of deer, moose or elk. The identification of local birds and plants

*Craven, Sask.

is a challenge. History is there, with early homesteads, the Indian tipi rings and medicine wheel, and nearby Cannington Manor.

We feel that this opportunity to integrate learning with the living laboratory of the outdoors provides the best method of fostering the positive values of respect and responsibility for our prairies. What needs to be done? We have formed a Society, and have bought land. Our membership is expanding, but we need wider support, more publicity and indications to the government that this project is considered by the public to be worthwhile. So far, we have received only support in principle from the Departments of Environment, Tourism and Renewable Resources, and Education. Chiefly, of course, we need money and have started a fund-raising drive for capital expenses, hoping to get the major donations from companies and granting foundations. What other ways can individuals help? How about looking

through the attic or basement for equipment that could be useful — kitchen equipment for the cabins; parka or boots for children who might come inadequately prepared; building materials, and farm and food processing equipment of all types. Remember that all donations, whether used goods or cash, are tax deductible. Or perhaps you'd like to undertake a specific project, such as setting up a fish farm, weather station, observatory for stars, weaving program, fruit cellar, ski trails, or a check-list of the birds of the area. Finally, maybe you'll enjoy spending some holiday time on weekends with us.

To join or help, call or write to:

Prairie Lore and Living Society,
45 Langley St., Regina, Sask.

Don Stewart, R.R. 2, Craven.

(Phone 485-2754)

Jack Mackenzie, 307-2720 College Ave., Regina.

(Phone 523-0192)

Letters

GYRFALCONS NEAR SALTCOATS, SASKATCHEWAN, 1963-64

Throughout the winter of 1963-64 I made nearly 20 observations of Gyrfalcons, chiefly along Cutarm Creek south of Saltcoats. All but one or two sightings were of dark-phase birds. In the fall of 1964 I made the following Gyrfalcon observations: November 18 and November 25, dark phase; December 6, light phase; December 26, dark phase. — *Bill Horseman*, Box 22, Saltcoats, Saskatchewan.

ROAD ALLOWANCES

On Page 54 of the March, 1974 *Blue Jay*, an article by Hugo Tiessen on Road Allowances was exactly what I had often thought about.

These approximately 90-ft. wide strips designated as road allowances are not all used for roads and are left idle in many instances, providing windbreaks, shelter for birds. Many are dense with Saskatoons, Chokecherry and wild roses. They provide food for birds and often a slough for water birds — real little wild parks. Needing no money for upkeep, no expensive park wardens, just asking to be left alone to preserve our heritage.

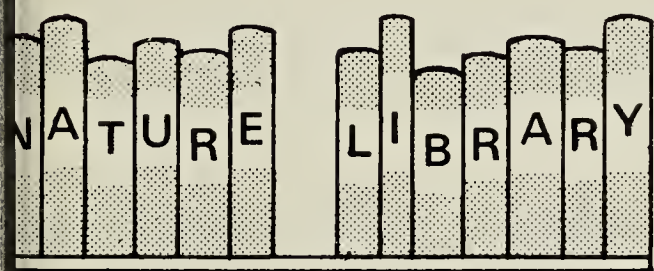
In the past, municipalities have of-

en granted farmers permission to break up a strip if it was not being used as a road. Now that grain is a better price. I can see many farmers eyeing the natural little parks and seeing them as a means of a few cheap acres.

The Churchbridge Municipality passed a resolution recently to keep these road allowances unbroken, according to the Yorkton Enterprise.

Wouldn't it be great if, at the next Rural Municipal Convention, the powers that be could be convinced of the importance of keeping these strips intact, except where roads need to be built.

No money needed, no money lost! Parks for the birds and other animals! We really should try and save them. They amount to hundreds of acres. — *Cate Thompson, RR 1., Bangor, Saskatchewan.*



WHERE THE WAGON LED

by R. D. Symons
Doubleday Canada Ltd., Toronto, Ontario.
Doubleday and Company Inc.,
Garden City, New York.
43 pp. 1973. \$8.95

This beautifully written book, "Where The Wagon Led", is undoubtedly autobiographical but it reads like a well coordinated series of short, short stories. R. D. Symons came out west from England as a well educated 17-year-old lad. He chose to settle in the west because he hoped to get work as a cowboy or at least work with horses. Besides being an expert rider, the boy was very knowledgeable where horseflesh was concerned and his love

and respect for these animals is evident throughout the book. Mr. Symons' cowboy career was slow to start because of his small stature; however, his riding skill, training skills and natural ability to work horses soon gained favourable recognition for him from many cattlemen and he worked with the best of them, enduring almost indescribable hardships through severe winters and sometimes summers almost as bad. Mr. Symons' characterizations of many friends, acquaintances and some scoundrels, are very vivid and sometimes humorous but the reader is carried along from episode to episode with interest and excitement. The early days of ranching, the then young Royal North West Mounted Police, and the influx of farmers, are all described with his usual strength, good use of the English language and no waste of words. Although he does not dwell on the subject at any great length, he does mention his service in World War I with special emphasis on the horses which were used extensively.

Any horse lover will enjoy this book and will understand the emotions of the author without any difficulty. It is also of tremendous interest to a greenhorn like your reviewer, who knew little about the horse but learned much from the book even to the point of grasping Mr. Symons' innermost feelings regarding a beloved era, now past, when man's very existence often depended on the horse.

Mr. Symons was a nature lover and an artist (the 70 illustrations in "Where The Wagon Led" are his own) and through the years his activity and interest in ecology, conservation, love of all wildlife and his art work finally earned him an honorary L.L.D. from the University of Saskatchewan. He died February 1, 1973, his passing mourned by many. The following quote seems very fitting for such a man as Mr. Symons:

"But ask the beasts, and they will teach you; the birds of the air, and they will tell you." . . . (Job. 12:7). —*Pat O'Neil, 1125 Elliott St., Saskatoon, Sask.*

DIGGING AND DIVING INTO THE PAST: RECENT TITLES ON ARCHAEOLOGY

compiled by DIANE WEIR*

AYLESWORTH, T. G. 1971. *Mysteries from the past*. Nine articles by seven authors present recent archaeological finds that either illuminate former mysteries or discuss puzzlers not yet solved.

910.03 A978

BACON, Edward. 1971. *Archaeology*. Archaeological progress and discovery in the 1960's are discussed ranging in location from Mongolia and Western Australia to the "traditional" sites of Greece and the Middle East.

910.03 B128

BRAY, Warwick. 1970. *The American Heritage guide to archaeology*. Set in a dictionary format, this non-academic guide covers archaeology from human evolution and the prehistoric period to the civilizations of Egypt, the Near East, Europe and the Americas with sections on sites, cultures, field monuments, artifacts and techniques of modern archaeological research.

913.03 B827

BRENNAN, L. A. 1973. *Beginner's guide to archaeology*. The modern digger's step-by-step introduction to the expert ways of unearthing the past.

913.031 B838

BRUNHOUSE, R. L. 1973. *In search of the Maya*. This book tells of the rediscovery of the long-forgotten Maya cities by describing the explorations of eight pioneering archaeologists.

913.031 B985

CERAM, C. W. 1971. *The first American*. A story of North American archaeology containing a spirit of adventure and romance in its account of the origins and early history of the American Indians.

970.1 C411

DE CAMP, L. S. 1972. *Great cities of the ancient world*. A lively account of the history, geography, architecture and people of Thebes, Jerusalem, Ninevah, Tyre, Babylon, Memphis, Athens, Syracuse, Carthage, Alexandria, Anuradhapura, Rome, Pataliputra and Constantinople with 150 photographs, drawings and maps.

913.03 D291

EYDOUX, H. P. 1971. *In search of lost worlds*. The story of the great ar-

chaeological discoveries from the finds of the early Egyptologists to the explorations at Masada in the early 1960's, when archaeologists were able to make use of the latest scientific techniques.

915.603 E97

FLEMMING, N. C. 1971. *Cities in the sea*. A British marine archaeologist combines sunken-city legends with actual underwater explorations and discoveries to provide a survey about the cities and ships from prehistoric to Roman times which lie under the Mediterranean Sea.

913.031028 F599

FRIMMER, Steven. 1971. *Finding the forgotten*. Accounts of the lives and adventures of great discoverers of the past and the lost civilizations they enabled us to understand, such as Babylon and Ninevah, Stonehenge and the Etruscans, the Sumerians and Hittites.

913.031 F913

FRYE, John. 1973. *The search for the Santa Maria*. The search — the diving and digging, the finding of artifacts, the archaeological detective work — for the Santa Maria, the ship that brought Christopher Columbus to the New World, located off the north coast of Haiti.

Y 913.031028 F948

HAMBLIN, D. J. 1973. *Buried cities and ancient treasures*. A personalized narrative of archaeological finds in the Middle East, particularly Turkey, including Troy, discoveries in Hittite ruins, antiquities recovered from the sea, and legends which have proved to be true.

Y 913.392 H199

HAMBLIN, D. J. 1970. *Pots and robbers*. A trained archaeologist writes of events which combine ancient history, archaeology and detection.

913.3703 H199

HARKER, Ronald. 1972. *Digging up the Bible lands*. Describes the archaeological exploration of eight sites which have provided information on places and events spanning the story of Jewry and the birth of Christianity.

915.603 H282

HARRIS, J. E. 1973. *X-raying the pharaohs*. An important breakthrough in Egyptology tells how the ancient Egyptian ruling class lived and died.

913.32 H314

*Saskatoon Public Library,
23rd St. and 4th Ave.,
Saskatoon, Sask.

JAMES, T. G. 1972. *The archaeology of Ancient Egypt*. Well illustrated introductory material on ancient Egypt covering both history and archaeology and the work of important Egyptologists such as Belzoni, Petrie and Carter.

913.3203 J29

AROUSSE *encyclopedia of archaeology*. 1972. Comprehensive examination of archaeology by experts in the field with discussion of its evolution, nature and the cultures and civilizations of former times (another copy in Reference).

FA 913.031 L332

AGNUSSON, Magnus. 1972. *Introducing archaeology*. The story of how archaeology has grown into a disciplined science in only a century and a half and what it can tell us about our own past.

913.031 M199

ARX, R. F. 1973. *The lure of sunken treasure*. Excitement under the sea with marine archaeologists and treasure hunters.

910.453 M392L

ARX, R. F. 1971. *Shipwrecks of the Western Hemisphere, 1493 - 1825*. History of shipwrecks, salvage operations, identification, and preservation of finds.

910.453 M392s

EYER, K. E. 1970. *The pleasures of archaeology*. A guide to the splendours of the past with pictures of various treasures from such countries as France, Egypt, Israel, England and Mexico.

913.031 M612

EYER, K. E. 1973. *The plundered past*. Story of the illegal international traffic in works of art and of the worldwide destruction of what is left of our civilized past including a full appendix, comprehensive bibliography, photographs and a full list of major art thefts since 1911.

382.457 M612

ANNEY, Roy. 1970. *Underwater archaeology*. Examination of treasures

beneath the sea, the history of diving, advances in the technology of underwater archaeology, training of underwater archaeologists and dangers facing the divers.

Y 910.453 P656

RIETH, Adolf. 1970. *Archaeological fakes*. Survey of the history of faking followed by fascinating stories of how archaeological fakes were made, planted and accepted or exposed with such examples as the Piltown Skull, some cave paintings, and the gold 'Tiara of Saitaphernes'.

001.95 R563

ROE, D. A. 1970. *Prehistory*. An introductory account of the main sequences of events in Old World prehistory from earliest times to the Roman Empire.

913.031 R698

ROGERS, Fred. 1973. *Shipwrecks of British Columbia*. Major book on marine history which describes the shipwrecks occurring in the treacherous coastal waters off British Columbia.

910.453 R725

THROCKMORTON, Peter. 1970. *Shipwrecks and archaeology*. This book studies underwater archaeology with emphasis on shipwrecks such as the H.M.S. Nautilus in the Mediterranean in 1807.

913.031028 T531

WILKES, B. S. 1971. *Nautical archaeology*. A handbook for skin divers which provides in-depth information necessary to carry out small or large archaeological expeditions underwater at little cost with extensive illustrations, drawings and appendices on likely prospecting grounds and salvage laws.

627.704 W682

YADIN, Yigael. 1971. *Bar-Kokhba*. Day-to-day description of the exploration in 1960 and 1961 of caves in the Dead Sea cliffs north of Masada and the discovery of documents discussing the Jewish rebellion against the Emperor Hadrian.

913.031 Y12B

* * * * *

ragonfly flambe.
butterfly wings au gratin.
grasshopper mousse.

That may be an exaggeration, but a University of Toronto zoology professor *does* say that if current population trends continue for another 25 years we'll probably be eating insects to stay alive.

Wildlife Report, Aug.-Sept., 1974

30 Years Ago

With the July-August-September issue of the *Blue Jay* thirty years ago the second volume of the journal was completed, for at that time the *Blue Jay* year coincided with the Society's year, ending in October with the annual business meeting. In this issue, therefore, members were reminded that on September 25 their membership fees would be due — still a modest 50 cents!

It was also noted in the editorial that the *Blue Jay* had just been publicized in the *Regina Leader-Post* by Mrs. Flock, and it was hoped that her suggestion for the formation of more natural history societies in Saskatchewan would bear fruit. In the meantime, Mrs. Priestly was forging links with the local clubs by reporting their activities in the *Blue Jay*. The Regina Natural History Society, for example, was reported as holding "before breakfast" hikes, as supplying subscriptions to *Canadian Nature* to 12 schools, and as trying to arrange to purchase or lease

"Happy Valley", a coulee leading into the Qu'Appelle Valley, to make it a wildlife sanctuary.

As has been the case so often in the history of the *Blue Jay*, an effort had to be made to encourage a variety of observations, and it was hoped to start a new series of notes on unusual occurrences that would include plants and insects as well as the more popular birds! But there were, as usual, a good number of interesting bird notes. For one thing, a lively discussion was taking place over the choice of a bird emblem for Saskatchewan, and Mrs. Priestly reported an endless diversity of opinion on this subject. "The mallard, prairie chicken and meadowlark seem most favoured but even with these opinions differ. One member likes the idea of the prairie chicken because the latter has often provided a meal for the early settler while another member feels that to many people the mallard and prairie chicken are only looked on as something to eat and doesn't like either for this very reason!"

SASKATCHEWAN NATURAL HISTORY SOCIETY TWENTY-SIXTH ANNUAL MEETING — OCTOBER 18-19, 1974

The twenty-sixth annual meeting of the Saskatchewan Natural History Society will be held in the Moose Jaw Art Museum on October 18 and 19, 1974.

Registration: Friday evening, beginning at 7:30 p.m., and Saturday at 8:45 a.m. Fee for adults: \$1.00 (no charge for persons under 16). There will be an additional charge for the dinner to be paid at registration.

The Friday evening programme includes a film show (beginning at 8:15) and a coffee hour, arranged by the Moose Jaw Natural History Society.

Saturday activities begin with a bird trip from 7:15 to 8:15 (departing from Athabasca Street E., near the Library). The business session commences at 9:00 a.m., with an alternative field programme for junior naturalists, who will also lunch together at noon. For adult members we hope to have a luncheon speaker at an informal meal that all interested persons are invited to attend.

Saturday afternoon: resolutions and unfinished business, with the traditional Members' Show and other features. **ANY INTERESTED MEMBER IS INVITED TO SHOW 10 SLIDES** (Please leave these at the registration desk Friday night or early Saturday).

The annual dinner and presentation of awards will be held at Zion United Church Hall (on Main Street across from Eaton's) at 6:30 Saturday. At 8:00 p.m. an illustrated lecture, open to the public, will be given in the Art Museum by Dr. Rick Riewe, biologist from the University of Manitoba, on "The Ecology of the Inuit in the Eastern High Arctic".

RESOLUTIONS should be sent to the Resolutions Chairman, Dr. Ole Nielsen, 327 Poplar Crescent, Saskatoon, as far as possible in advance of the meeting (deadline for submission of resolutions, in writing, will be 10:00 a.m. Saturday).

Suggestions for **NOMINATIONS** for elected members of the Board of Directors should be submitted to the Chairman, Jim Wedgwood, 610 Leslie Avenue, Saskatoon.



**SASKATCHEWAN NATURAL
HISTORY SOCIETY**

P.O. BOX 1321, REGINA, SASKATCHEWAN, S4P 3B8

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